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VOLUME IV, NUMBER 2 APRIL, 1943

JOHN STUART MILL, PIONEER OF DEMOCRATIC LIBERALISM IN ENGLAND

BY J. SALWYN SCHAPIRO

It has been said, perhaps by Bertrand Russell, that all Englishmen are liberals: the Conservatives are liberals on the right, and the Laborites, liberals on the left. That is the plain truth. Politics which divides these parties is far less important than the ideal of liberalism which unites them. An ardent devotion to individual freedom and an unbounded faith in popular government are the attitude of both parties toward life and life's problems. It is this fundamental attitude of the English people which explains the fact that the militant enemies of liberalism in our day, communism and fascism, are both equally insignificant in England, numerically and in every other way.

Liberalism in England is not an acquired characteristic as it was among the nations on the Continent. It was born in England, and there it has been carefully and steadily applied from age to age, from class to class, from problem to problem. In one form or in another the liberal attitude is the attitude of the average Englishman. Hence the roots of English liberalism are many and deep, and for that reason it was able to withstand, at one time, the fierce revolutionary storms that blew from France, as in our day it has been withstanding the fierce fascist storms that blow from Germany.

It is rare that the characteristics of an age and of a nation can be found integrated in the life and work of a single individual. However, John Stuart Mill is that unique example of the man who incarnated the liberal movement in nineteenth-century England in all its phases: Utilitarianism, Classical Economy, Philosophic Radicalism, and, in its later democratic phase, universal suffrage, including women, proportional representation, and social reform. In Mill, one "sees an age, and one sees a man";[1] and, it might be added, one sees a nation,—liberal England.

Mill's *Autobiography* is an extraordinary human document.

[1] John Jacob Coss, Preface to *Autobiography of John Stuart Mill* (New York, 1924), hereafter cited as Mill, *Autobiography*.

In it we get a brief, yet intimate, picture of the author's life as he developed from childhood to the year 1873 when the book was published. Mill was born in London on May 20, 1806, "the eldest son of James Mill, the author of the History of British India."[2] His appearance in the world might almost be said to be due to "spontaneous generation" from the atmosphere of Utilitarianism rather than to the union of his parents. Throughout the *Autobiography* there is no mention of his mother. The wife of a famous man and the mother of a great one, Mrs. Mill was relegated to oblivion by both. She was not beloved by her husband, James Mill,[3] and, probably because of that, she aroused only indifference in her son. The only figure that stands out, clear and sharp, in Mill's early life is his father who, to his son, was not a "father" but the "author of the History of British India" and his one and only teacher. Mill had no emotional family ties, not even to his father whom he greatly admired and respected,—and feared, but never really loved. There are only casual references to his brothers and sisters in the *Autobiography* who, from all accounts played no part at all in his life. Mill was neither a "son" nor a "brother" but a product of an educational experiment conducted by his father.

James Mill, with the aid and the encouragement of his "master" and neighbor, Jeremy Bentham, determined on a rigid plan to bring up young Mill with the object of making him a missionary of their Utilitarian faith. They were deeply influenced by the idea of the French materialist philosopher, Helvétius, that education and environment, not original endowments, are the most important factors in the development of an individual. In early childhood young Mill was given hard intellectual tasks by his father who acted as his private teacher. At the age of three, he read Greek; at eight, Latin; and, at twelve, he had read nearly all the classics in the original. History, logic, and philosophy were the other subjects taught him by his father-teacher. James Mill, being an atheist, naturally did not give religious instructions to his son. Young Mill was never truly a child; he read few children's books; he had no playmates other than his brothers and sisters whose teacher he himself became, being the eldest of the Mill children. Practically the only persons with whom young Mill associated intimately were his stern, rigid father and that eccentric bachelor,

[2] *Ibid.*, 2.

[3] Leslie Stephen, *The English Utilitarians* (New York, 1902), II, 39.

Bentham. It was chiefly his father who fashioned John Stuart Mill's early life and profoundly influenced his ideas and conduct. So deep was the influence of the father on the son that, even after the death of the former, the latter felt his father's ghostly hand on his shoulder to the end of his days.

Although Mill never went to a college or to a university, he was as intellectually mature at the early age of fifteen, as an intelligent man of twenty-five with all the advantages of a higher education. The first intellectual task assigned to him was to edit Bentham's great legal work, *Rationale of Evidence,* a task which young Mill performed with striking ability. Utilitarianism was the creed in which Mill was suckled, cradled, and nurtured by his father and Bentham. Naturally when he came to make a systematic study of the doctrines of Bentham, he came with a will to believe in their everlasting truth. As he states in his *Autobiography* the "feeling rushed upon me that all previous moralists were superseded, and that here indeed was the commencement of a new era in thought. . . . I now had opinions; a creed, a doctrine, a philosophy; in one among the best senses of the word a religion."[4] At the age of seventeen Mill began writing for Benthamite journals, especially for the Westminster Review, the "official" organ of Utilitarianism. At the same time he was appointed to a clerkship in the office of the East India Company where his father held a high position. Young Mill now had not only a "philosophy" but the economic security of a job and prospects of a career as a writer. All seemed bright for the precocious young man whose life and career had been so carefully planned and arranged. But Mill had arrived to maturity emotionally starved; the development of the human emotions had been no part in his early education. Music, poetry, games, novels, all had been anathema to his teacher-father. And women and sex were outside the Utilitarian conception of "happiness." As a consequence Mill, at the early age of twenty, suffered a nervous breakdown. His recovery was a slow process, and he emerged from his illness, not a different, but a mentally healthier man. Wordsworth was his "doctor." By reading the poetry of Wordsworth Mill caught glimpses of emotional and imaginative aspects of life. He began to consider happiness as concrete, emotional experiences of individuals, very different from the abstract "happiness" of Utilitarianism. He now sought, con-

[4] Mill, *Autobiography,* 46–47.

sciously and deliberately, to cultivate his emotions by devoting himself to poetry, music, and art. Mill also sought new associations, and became intimate with that emotion-intoxicated philosopher, Thomas Carlyle.

But the peak of Mill's emotional development came when, at the age of twenty-four, he met Mrs. Taylor, a sensitive, intellectual woman married to a plain business man. Mill found her a stimulating companion, and sought her out on all occasions. He became a frequent visitor to the Taylor home, and often found himself alone with Mrs. Taylor. The intellectual friendship ripened into love, a relationship that was regarded as scandalous by Mill's family and friends. Nevertheless, it is highly doubtful whether, in this English version of a *ménage à trois,* there was anything more than a platonic relationship on the part of all three. This intimacy of Mill and Mrs. Taylor lasted for twenty years, until 1851, when the husband died. His widow and Mill were promptly married.

Mrs. Taylor exercised a profound influence on Mill's life and thought. She was his one emotional outlet; without her he would, in all likelihood, have withered and dried up in early manhood. It was his profound belief that Mrs. Taylor had opened his eyes to newer vistas of human progress through her great sympathy with the working class. So highly did Mill think of her originality that he regarded his writings as inadequate attempts on his part to express her ideas. Mill's opinion of the extraordinary ability of Mrs. Taylor was not shared by his associates, who believed that she merely echoed his own opinions. In all probability Mrs. Taylor greatly impressed Mill by expressing more colorfully and more vivaciously than he could the very ideas that she got from him.

The period of Mill's relationship with Mrs. Taylor is the fruitful period of his life. His first book, *Logic,* appeared in 1843, and had a great success. When the *Principles of Political Economy* appeared in 1848, it quickly became the most widely read book on economics since the publication, in 1776, of Adam Smith's *Wealth of Nations.* It was the final and supreme exposition of the doctrines of the Classical school. In addition Mill widened the scope of classical economy by applying its doctrines, far more than had its founders, Ricardo and Malthus, to concrete human experiences and problems. For half a century Mill's *Principles* was the standard text book in economics throughout the English-speaking

world. When, in 1859, *On Liberty* appeared, dedicated to his wife, Mill was universally acclaimed as the great liberal philosopher of his age and of his nation.

Mill's prominence as a writer on politics and his pronounced views on the questions of the day brought him into the political arena. In 1865 he was elected to Parliament as a kind of left-wing Liberal. But the philosopher in politics did not play much of a parliamentary rôle. As an orator he was as "cold as a statue," and made a poor impression on a body that knew Gladstone and Bright. "His figure was spare and slight, his voice weak; a constant twitching of the eyebrow betrayed his nervous irritability."[5] Mill's activity in Parliament was not very great. He attracted attention by advocating proportional representation and woman suffrage, principles that were regarded as "whims" even by his Liberal colleagues. He again ran for Parliament in 1868, but was defeated. Mill, thereupon, retired from politics. Five years later, in 1873, he died in Avignon, France, at the age of sixty-three.

Mill has an assured place in the intellectual history of Europe during the nineteenth century. However, it cannot be fairly said that he was an original and creative thinker as were his fellow Utilitarians, Bentham, Ricardo, and Malthus. Mill was a popularizer of genius "unsurpassable as an interpreter between the abstract philosopher and the man of common-sense."[6] As a popularizer his intellectual honesty and receptive open-mindedness were so great that they gave a quality of moral originality to his opinions. It was Mill who was chiefly responsible for destroying the sectarian spirit of Utilitarianism and causing it to flow into the main stream of English liberalism. His complete tolerance of opposing views and his candor in regard to his own views enabled him to make Utilitarianism more palatable to those who accepted its doctrines, and attractive to those who at first had been repelled by them. In Mill's hands the rigid angles of Benthamism were trimmed away and rounded into the curves of a new liberalism that appeared all-embracing in its humaneness and sweet reasonableness. This new liberalism became a classless, national ideal that appealed to all sorts and conditions of men and women, not like the old liberalism, as formulated by Bentham, which appealed only to the middle class. Strangely enough it was from the hard soil

[5] Leslie Stephen, *op. cit.*, III, 64.

[6] *Ibid.*, III, 17.

of Benthamism that grew the fairest flower of English liberalism, which was Mill. Considering his early influences and peculiar upbringing he might have become a logical machine like his father, or a benevolent crank like Bentham, had it not been for his naturally sweet disposition and—Mrs. Taylor.

If ever the style was the man it was that of Mill. His was a "white" style, clear, distinct, and precise, an excellent example of the noble simplicity of the best English prose. The appeal of Mill's argument becomes more convincing because the language used is as clear as the logic is impeccable. But Mill's style lacks color, hence it is without warmth. Occasionally, as in *On Liberty* and in *The Subjection of Women*, the intensity of his convictions on matters very dear to him is so deep that the style becomes tinged with emotion and rises to a restrained kind of eloquence. There is hardly a trace of humor or satire in all of Mill's writings. What is present, and constantly present, is moral earnestness which, in the case of a writer less gifted than Mill, would have made them dry and commonplace. What saves Mill for posterity is that his moral earnestness is refined by a cool intellectuality, as a consequence of which the writings of this "saint of rationalism" have a luminous integrity that gives them, or the best of them, a place among the classics of political philosophy.

Mill was no unexplainable phenomenon. He was quite definitely the product of his environment, of his age, and of his nation. Apart from these fundamental factors there were influences that helped to mould Mill as the leading spokesman of nineteenth-century liberalism. One influence came from France. In his youth he had spent a year in France and had breathed "the free and genial atmosphere of Continental life.'" "Continental," to Mill, meant French. He knew the French language very well, and was an assiduous student of the writings of Comte, of Michelet, of de Tocqueville, of Guizot, and of the Utopian socialists, especially of Saint-Simon. For a time he was an intellectual intimate of Comte with whom he frequently corresponded. Mill's sympathies in France were decidedly with the elements on the left. He was in France during the Revolution of 1830 which inspired in him a feeling that he had entered on "a new existence." The Revolution of 1848 found in Mill an ardent supporter, even of its more radical phase. He expressed sympathy for Louis Blanc's plans for "na-

[7] Mill, *Autobiography*, 40–41.

tional workshops.''[8] German thought had little or no influence on Mill. Two great German political philosophers, Hegel and Karl Marx, were his contemporaries. He knew the work of Hegel, the reading of which gave him ''a sort of sickening feeling.'' As a results of his attempts to ''unwind'' Hegel, Mill came to the conclusion that to read that German philosopher tended ''to deprave one's intellect.''[9] Although Marx was a fellow-Londoner of his for many years Mill seemed never to have known even of his existence. There is no mention whatever of Marx or of Marxism in Mill's writings.

Another influence in the shaping of Mill's thought came from America. It was an indirect influence as Mill first became interested in America by reading de Tocqueville's *Democracy in America.*[10] This book convinced him that the American experiment in democracy was a success, and that democracy was both inevitable and desirable for all mankind. From America he also learned that a greater social equality was possible through a wider distribution of property. He became a strong supporter of the North during the Civil War, as the side that, in his opinion, fought to maintain political democracy and social equality.

In ''his single person he (Mill) spans the interval between the old and the new Liberalism.''[11] From the liberalism identified with a propertied suffrage and *laissez-faire* policies Mill passed to the new liberalism of universal suffrage and social reform without entirely abandoning his fundamental Utilitarian principles. It is the opinion of Dicey that the labor of Mill's life ''was the reconciliation of inherited beliefs, from which he never departed, with moral and intellectual ideals and sympathies, which, belonging to himself and to his time, were foreign, if not opposed to the doctrines of his school.''[12]

What elements of Utilitarianism did Mill retain? What elements did he transform? What elements did he abandon? And what new principles did he advocate? The answers to these questions will give a correct appraisal of Mill's place as a pioneer of

[8] Mill, *Vindication of the French Revolution of February, 1848,* in *Dissertations and Discussions* (New York, 1874), III.

[9] Quoted in *Quarterly Review* (July–October, 1910), 270.

[10] Mill, *Autobiography,* 134–135.

[11] L. T. Hobhouse, *Liberalism* (London, 1911), 107.

[12] A. V. Dicey, *Lectures on the Relation between Law and Public Opinion in England during the Nineteenth Century* (London, 1914), 424.

democratic liberalism and of his influence on his own and on succeeding generations. Mill accepted the basic principle of Utilitarianism, namely, the Greatest Happiness of the Greatest Number. But he rejected Bentham's method of applying this principle by calculating, weighing, and measuring "pleasures" and "pains" according to the scheme of the "felicific calculus." Mill revolted against this method of balancing accounts of man's emotions and stressed the *quality* rather than the *quantity* of pleasure. To Bentham "push pin was as good as poetry." Not so to Mill who believed that it was better "to be Socrates dissatisfied than a fool satisfied." Furthermore, he concluded that happiness came as a by-product, therefore it could not be, as Bentham had taught, a direct result of political and social policies. By stressing quality instead of quantity Mill transformed the Greatest Happiness principle from a system of psychological bookkeeping into a moral ideal. Mill also rejected the Benthamite identification of the interests of the Greatest Number with those of the middle class. He clearly and definitely included every man and every woman in his version of the Greatest Happiness principle, and he sought to promote their interests by advocating universal suffrage, including women, and the intervention of the state in economic life.

What Mill retained of bourgeois liberalism, as formulated in England by the Benthamites, was parliamentary government. To him it was an English political heritage that he prized above all other English institutions. Like all English liberals, of whatever school, Mill did not separate civil liberties from self-government; one supplemented and protected the other. Parliamentary government was better than any other system, if for no better reason than that it made necessary the political education of the people, thereby making them acutely conscious of the necessity of maintaining their liberties. Of all the systems of representative government he regarded the British as the best, and precisely because it was not a symmetrical political system with the powers of government neatly arranged according to universal principles of political science, as they were in the American and French constitutions. In the British system the powers of government, vested in the King, Lords, and Commons, did balance, he reasoned, but the scales never hung exactly even.[13] Despite the hereditary monarchy and

[13] Mill, *Representative Government*, in *Utilitarianism Liberty and Representative Government*, Everyman's Library (London, 1914), 228.

the bicameral legislature it was the Commons that exercised preponderance in the British system because it had the great moral advantage of being the popular element.

In Mill's day the political issue in England was not parliamentary government but the suffrage. After 1832 the issue between the old and the new liberals was whether parliament should be chosen by the propertied classes or by the masses of the people through universal suffrage. The old liberals feared the masses even more than they did the privileged aristocracy. In their opinion the masses, once enfranchised, would use their political power to confiscate property, to oppress minorities, and to suppress civil liberties, hence they were strongly opposed to the extension of the suffrage. The Reform Bill of 1832 was, to the old liberals, a "finality," the expression used by the leading protagonist of the Reform Bill, Lord John Russell.

Mill had the foresight and the generosity—and the good sense—to favor a democratic suffrage. And he did so not because he regarded the suffrage as an abstract "natural right" to be given to everyone just because he was born. As a Benthamite Mill repudiated the doctrine of natural rights; he favored the extension of the franchise because he was convinced that democracy was the most essential of securities for good government.[14] Democracy gave this security when a parliament was elected that had supreme authority to choose and dismiss the government through the methods of periodic elections and ministerial responsibility.[15] The poor should be given the vote in order to protect their interests; otherwise Parliament, representing the propertied classes, would judge questions affecting labor from the employers' viewpoint.[16] Universal suffrage was the essential means of preventing the wealthy middle class from becoming an oligarchy that would rule the country selfishly in its own interests like any other oligarchy. Mill lent his great influence in favor of the movement to extend the franchise which resulted in the Reform Bills of 1867 and 1884.

In no aspect of his political philosophy was Mill more ahead of the Victorian liberals than in his attitude toward woman. To him women were "people," hence part of the general public. In his famous essay, *The Subjection of Women*, Mill took an advanced

[14] Mill, *Autobiography*, 75.
[15] Mill, *Representative Government*, *op. cit.*, 239.
[16] *Ibid.*, 209.

feminist position by advocating the equality of women with men, the most practical and, at the same time, the most symbolic expression of which would be woman suffrage. He was convinced that whatever differences existed between the sexes arose from environment, from education, and from legal discrimination "due to the accident of sex."

Mill's essay brought the question of woman suffrage prominently to the fore for the first time since it had been raised in the eighteenth century.[17] He presented his reasons for extending the franchise to women with his characteristic lucidity, candid sincerity, and "sweet reasonableness." The granting of the franchise to women, he held, would be the supreme symbol of equality with men that would arouse in women a new sense of dignity. When in Parliament he showed considerable courage in offering a woman suffrage amendment to the Reform Bill of 1867. It received only 73 votes, but Mill's amendment may be said to have launched the woman suffrage movement which, in our day, finally achieved a great triumph.

Though he was converted to the principle of a democratic suffrage Mill never entirely freed himself from a feeling of distrust of the "rule of the numerical majority." Property, leisure, and education were, in England, so completely identified with the governing elements that he looked with misgiving at the prospect of the government falling into the hands of the illiterate, work-benumbed poor. In the class-ridden England of his day the mass of poor were the "lower classes," doomed to remain in that station of life into which they were born. And yet Mill was convinced that the "ascendancy of the numerical majority is less unjust, and on the whole less mischievous, than many others, but it is attended with the same kind of dangers, and even more certainly."[18] Majority rule was the only feasible plan in a democracy, hence the problem was how to have universal suffrage, and, at the same time, avoid the possible tyranny of majority rule. Regarding the vote, not as a natural right, but as a power over others, Mill favored checks on this power, lest democracy prove as tyrannical as abso-

[17] The pioneer of woman suffrage in France was Condorcet. See J. Salwyn Schapiro, *Condorcet and the Rise of Liberalism* (New York, 1934), 187–195. In England Mary Wollstonecraft's pamphlet, *A Vindication of the Rights of Woman*, published in 1792, raised the question of woman's rights.

[18] Mill, *Representative Government, op. cit.*, 268.

lute monarchy. So fearful was he of the tyranny of the majority that he became more fertile and more insistent in devising checks on universal suffrage than in advocating its establishment. He favored a literacy test for voting which, he believed, was "a political principle at once liberal and conservative." It was liberal, he reasoned, in that a literate electorate would favor liberty; it was conservative in that universal suffrage would not be established all at once. In order to prepare the masses for the franchise Mill urged the establishment of a system of popular education. Convinced that the rich "had more to fear from the poor when uneducated, than when educated," he appealed to the propertied classes to favor popular education "in order to ward off really mischievous errors, which would lead to unjust violations of property."[19]

Education, to Mill, was almost a universal solvent of the problems of democracy. Even a wholly literate electorate, he argued, was liable to commit acts of tyranny, as the majority would be dominated by special interests: class, religious, or sectional, particularly the first. The "sinister interests" of the privileged classes in an aristocracy might yield to the evil of "class legislation" in a democracy. Was it reasonable, he asked, to expect that the poor would resist the temptation "to follow their own selfish inclinations and short-sighted notions of their own good, in opposition to justice at the expense of all other classes and of posterity?"[20]

The political situation in England during the first half of the nineteenth century helps to explain Mill's fear of class legislation. Infuriated at having been left out in the cold by the Reform Bill of 1832, the workers turned on the middle class, their "allies" in the struggle for parliamentary reform. What became known as "Chartism" was a popular movement of the workers that challenged the rule of the middle class, ushered in by the Reform Bill. The workers now sought, in the name of "democracy," to get control of Parliament as, in 1832, the middle class had succeeded in doing in the name of "reform." Though its Six Points were definitely political, Chartism had a menacing socialist overtone that greatly alarmed the Liberals as well as the Conservatives. With all his generous sympathy for the disfranchised masses Mill dreaded a social upheaval of the lower orders. These fears were

[19] Mill, *Autobiography*, 121.

[20] Mill, *Representative Government, op. cit.*, 254 ff.

confirmed by the riotous demonstrations of the Chartists which, though easily quelled, yet gave a vivid idea of social revolution that brought terror to the propertied classes.

To avoid the danger of "class legislation," as well as that of other special interests, Mill proposed a scheme of plural voting and of proportional representation as checks on the "rule of the numerical majority." Plural votes were not to be given to those who owned property in different constituencies, as was then the practice; they were to be given to the highly educated element, the graduates of higher institutions of learning and to the members of the liberal professions. In a democracy the authority of the educated, few in number, would be augmented by "superiority of weight justly due to opinions grounded on superiority of knowledge."[21] Votes were to be both counted and weighed: counted in accordance with the principles of the Greatest Happiness of the Greatest Number and weighed in the scale of intellectual achievement. Democratic government was in essence, according to Mill, government by public opinion. The public in a modern nation, he argued, consisted roughly of two groups: employers and employees, each of whom was dominated by selfish class interests that dictated their opinions. Apart from both was a group of educated persons who, because of their intelligence and learning, were primarily concerned with "general" not with "class" interests.[22] In a democracy the highly educated would, Mill believed, make an irresistible appeal to the masses. It was not "in the nature of uninstructed minds to resist the united authority of the instructed."[23] If the highly educated were convinced of the necessity of changing the laws they would create sufficient public opinion in favor of the change. Great steps of progress, according to Mill, came as a result not of a "change in the distribution of material interests," but of a change in "opinion," a "social power" far greater than any other in a community. It was the educated element that was primarily responsible for the changes of opinion that made possible social progress. "One person with a belief is a social power equal to ninety-nine who have only interests."[24] In the political conflicts between the two interested groups, employers and em-

[21] Mill, *Autobiography*, 180.

[22] Mill, *Representative Government, op. cit.*, 255.

[23] Mill, *Dissertations and Discussions* (New York, 1874), I, 358.

[24] Mill, *Representative Government, op. cit.*, 183.

ployees, the educated *élite,* strengthened by plural votes, would join forces with that minority in each group who were sufficiently enlightened to subordinate their class interests "to reason, justice, and the good of the whole." In this way an enlightened section of the electorate would be sufficiently powerful to turn the scale in favor of that group whose special interests approximated those of the public.[25]

Mill's scheme of giving great power in the government to the "scholar in politics" was typical of the Benthamite radical. It was really an alternative to the aristocratic control of the government by the "gentleman in politics." Dislike of the aristocracy by the Benthamites was even greater than their distrust of the masses. Democracy, to Mill, really meant the substitution of one ruling class for another: an elected, educated *élite* for an hereditary aristocracy. An independent, educated group, chosen by universal suffrage to govern the nation, would accomplish the political objectives that Mill had most at heart: the elimination of aristocratic government and the limitation of the power of the "numerical majority."

In the days of Mill, when the highly educated were few in a community that was semi-illiterate or wholly illiterate, Mill's faith in their classless disinterestedness was plausible. Today, after more than half a century of democratic experience, it would be somewhat naïve to believe that the highly educated were sufficiently free from personal interests and prejudice and from class bias to be given greater political power than their numbers warranted.

What Mill considered another check to the "rule of the numerical majority" was proportional representation. He was convinced that the centuries-old method of electing representatives by a majority vote in single-member constituencies was especially bad in a democracy. This method, which gave *all* the power to the party that succeeded in winning parliament by ever so narrow a majority, greatly exaggerated the already dangerous power of the majority. Elections once over, the minority, be it ever so large, found itself the helpless prisoner of the majority, be it ever so small. In the scheme of proportional representation through the method of preferential voting, as devised by Thomas Hare, Mill saw one of "the very greatest improvements yet made

[25] *Ibid.,* 255.

in the theory and practice of government.''[26] By giving both to the majority and to the minority representation in proportion to their numbers, it would tend to decrease the power of the former and increase that of the latter. Mill's special tenderness for the rights and opinions of minorities caused him to see in proportional representation a means of obviating the danger of majority tyranny.

Mill's advocacy of universal suffrage and his fear of the ''rule of the numerical majority,'' seemingly contradictory, were yet consistent with his fundamental individualism. Democracy to him was the political recognition of the moral worth of every individual, every woman as well as every man. Mill did not greatly fear persecution of isolated individuals who expressed heterodox opinions, because such individuals were seldom considered dangerous to the community. What he did fear was persecution of *minority groups*, because organized minorities roused fears for the safety of the established order and invited attack. Protection of minorities was, therefore, the true test of freedom of opinion. And for that reason Mill advocated proportional representation, which was, in his view, the most effective method of protecting the freedom of the individual to express opinions that roused general hostility.

As a liberal Mill was opposed to an hereditary upper house; however, he favored a bicameral system as another method of preventing the ''tyranny of the majority.'' In place of the hereditary House of Lords he advocated the establishment of a ''Chamber of Statesmen'' so constituted that it would be a check on a democratically elected lower house.[27] This Chamber was to consist, in general, of high government officials, of university professors, and peers elected by the entire peerage. Such an upper house would prove an effective bar, Mill thought, to tyrannical measures that might come from a democratically elected lower house.

Curiously enough, Mill opposed the secret ballot and favored open voting. The secret ballot, he thought, was an inducement to the voter to hide his selfish motives and to give vent to his prejudices. Therefore the elector should vote ''under the eye and criticism of the public,'' as it was his moral obligation to consider the public welfare first and foremost. The ''mere obligation of preserving decency,'' through public voting, would be a check on the

[26] *Ibid.*, 263.
[27] *Ibid.*, 328–29.

abuse of the power of the vote. As proportional representation involved the use of the ballot, Mill recommended that each voter should affix his signature to his ballot. He was well aware that open voting encouraged coercion, but he minimized it on the ground that the power to coerce was declining whereas class consciousness and class antagonism were growing among the electorate.[28]

Mills' opposition to the secret ballot can be explained only by his extreme caution in regard to the very thing that he generally favored, a democratic suffrage. In this case his caution landed him on the side which he detested, the conservative. Like the puritan that he was, he condemned those who yielded to coercion even more than those who did the coercing. Mill expected the poor voter, at the mercy of his landlord or of his employer, to hold out against threats of economic ruin, thereby proving himself a moral hero. He failed to see that the secret ballot was a highly utilitarian device which enabled every citizen to vote according to his opinions without fear of consequences.

Mill's revulsion against Chartism can be seen in his opposition to the payment of members of Parliament, which, like the secret ballot, was one of the Six Points in the People's Charter. He opposed the payment of members on the ground that it would tend to create a class of professional politicians and demagogues who would be attracted to the calling of parliamentary representative by the inducement of salary. "It amounts to offering 658 prizes for the most successful flatterer, the most adroit misleader, of a body of his fellow-countrymen."[29] He failed to see that the payment of salaries to members of Parliament would be an inducement to honest, not to dishonest, legislators. There were far greater monetary temptations than salary to dishonest legislators.

Mill's political views mark the extent of his departure from the bourgeois liberalism of his day. Not only was he more democratic in his definite proposals, but his general outlook on the political problems of his day was far broader than that of his liberal contemporaries. He did realize what they did not or would not realize, that under modern conditions the affairs of state concerned directly every one in the community. Hence the organization of the state, as well as its policies, should be controlled by every one in the community. That was the democratic idea that Mill grasped

[28] *Ibid.*, 300–307.

[29] *Ibid.*, 311–12.

fully and firmly, despite many saving clauses, which gives him his place as a pioneer of democratic liberalism.

Was Mill's liberalism as advanced in its economic as it was in its political aspects? Democratic liberalism flouted the principles of classical economy in that it urged government intervention in the relations between capital and labor. In the first edition of his *Principles of Political Economy* Mill accepted these principles and gave them wide currency, not only in England, but throughout the world. Despite these facts, it would be incorrect to say that he was a pillar of classical economy as was Ricardo or Malthus. Some of its principles he accepted fully and whole-heartedly; others, he modified; still others, he rejected entirely. It was his modifications and rejections that gave Mill his place as a pioneer of social and economic policies distinctive of democratic, not of bourgeois, liberalism.

What principles of classical economy did Mill at all times accept? These were freedom of enterprise and the maintenance of private property, principles that he never really modified and never really rejected. Free enterprise, so distinctive of modern capitalism, was to Mill the very touchstone of economic progress, without which mankind would be thrust back into the straitjackets of mercantilism and feudalism. And private property he regarded as the one sure guarantee that whatever economic progress was made would be both maintained and strengthened for still greater advances. What he urged was the improvement of the system of private property so that everyone would share in its benefits.[30]

What principles of classical economy did Mill modify? One important principle he modified, and that very seriously, was the principle of *laissez faire,* the very keystone of "the obvious and simple system of natural liberty," to use the famous expression of Adam Smith. Mill came to the conclusion that there was a distinction between the nature of the forces that controlled the production of wealth and those that controlled its distribution, a distinction he regarded as his most important contribution to economics. The production of wealth was determined, he held, by natural "economic laws" that operated inexorably, impersonally, and inevitably. But the distribution of wealth was a social matter,

[30] John Stuart Mill, *Principles of Political Economy,* edited with an Introduction by W. J. Ashley (New York, 1909), 217, hereafter cited as Mill, *Principles.* See also Mill, *Autobiography,* 174–75.

dependent on the human will; hence society had the power to arrange as it pleased the manner and form of distributing the wealth produced in a community.[31] Mill's modifications of the principles of classical economy were incorporated in the third and subsequent editions of his *Principles*. The last edition during his lifetime, in 1871, was really a treatise on social philosophy with distinct leanings toward state intervention and Utopian socialism. Mill's new view concerning the distribution of wealth directly contravened that of Ricardo, according to whom "economic laws" rigidly determined the method of distributing the wealth produced between landlords, capitalists, and laborers.

The actual economic situation in England in the middle of the nineteenth century had much to do with Mill's renunciation of the Ricardian law of the distribution of wealth, so basic in classical economy. After a century of rapid industrial development the distribution of wealth in England exhibited gross inequalities. A small class of capitalists had succeeded in becoming enormously wealthy, but the mass of the population was sunk in dire poverty. It was "questionable," declared Mill, "if all the mechanical inventions yet made have lightened the day's toil of any human being. They have enabled a greater population to live the same life of drudgery and imprisonment, and an increased number of manufacturers and others to make large fortunes. They have increased the comforts of the middle classes. But they have not yet begun to effect those great changes in human destiny, which it is in their nature and in their futurity to accomplish."[32]

Was the policy of *laissez faire* pursued by the government responsible for this situation? Mill was too much the classical economist to repudiate entirely the cherished principle of nonintervention, every departure from which, he had declared, was a "certain evil" unless "required by some great good."[33] Indeed, at one time he was opposed to government intervention in the relations between capital and labor, because it encouraged the poor in the belief that the government would look after them. Such a policy, he had warned, would promote social revolution, the only result of which would be to make matters worse for the poor.[34]

[31] *Ibid.*, 199–201.

[32] Mill, *Principles*, 751.

[33] *Ibid.*, 950.

[34] Mill, *Dissertations and Discussions* (New York, 1874), II, 277–278.

However, the gross inequalities of wealth brought many doubts to Mill as to the efficacy of "economic laws," unhindered by "artificial" government intervention, to produce the Greatest Happiness of the Greatest Number. He was horrified when confronted with the hideous facts concerning the exploitation of the workers as revealed by the reports of the commissions of inquiry into the conditions in the factories (1833) and in the mines (1842). "Can political economy do nothing but only object to everything, and demonstrate that nothing can be done?" Mill asked plaintively.[35] Trade was a "social act," hence it was in the power of the government to prevent the anti-social practices of business. As his doubts increased concerning the validity of *laissez faire*, Mill's sympathetic nature recoiled from the bleak house that the classical economists had erected for the habitation of mankind. Slowly and tentatively he came to believe in the right, and even in the duty, of the government to intervene in the relations between capital and labor when the common good demanded it.[36] The Greatest Happiness principle, so dear to the Utilitarian, would then be vindicated by social reform in favor of the working class.

The acid test of the philosophy of an economist is his attitude toward labor. Generally speaking there have been, in modern times, three attitudes toward labor: that of the classical economist, that of the social reformer, and that of the socialist. Mill could be put in all three of these categories; in his case at least it does not lead to confusion and misjudgment. His transparent honesty and utter candor leave no one in doubt as to his position on problems affecting labor. When Mill is himself in doubt he plainly says so. In relation to labor, Mill completely abandoned the "wages fund" theory, another tenet of classical economy. According to this theory the amount set aside by capital for wages was rigidly determined by a "natural" economic law which decreed that the average wage could never be any more or any less than the amount of circulating capital invested, divided by the number of laborers employed. It followed from this theory that an increase of wages was at the expense, not of capital, but of the less fortunate laborers. Neither the government through laws, nor trade unions through collective bargaining, could change this condition, which was decreed by universal, impersonal, implacable

[35] Mill, *Principles*, 373.
[36] *Ibid.*, 796, 977.

"economic laws." By implication the "wages fund" theory doomed the working class, as a class, to eternal poverty. The only possible way for the workers to raise their standard was, according to the Malthusian theory, to limit their numbers; when the fund was divided by a smaller number of laborers, a higher wage would be the result.

Mill had at first supported the "wages fund" theory, and had denounced as pernicious the efforts of trade unions to raise wages. Later, in 1869, he frankly repudiated the theory and declared that if the employer was obliged to pay more for labor the increase came solely from his own pocket; hence the raising of wages of the organized workers through trade union action was not at the expense of the unorganized worker. Trade unions were now a rightful means of raising the standard of living of the working class.[37] Mill urged the workers to organize in order to protect their interests; unions and strikes he now considered "a valuable part of the existing machinery of society."[38]

Mill's abandonment of the "wages fund" theory came at a time when the theory no longer had any justification in the economic condition of England. In the days of Ricardo, when there were serious difficulties in the way of accumulating capital, stern "economic laws" were needed to keep labor always on the subsistence level by restricting the amount of "variable" capital put aside for labor as a wages fund. But during England's economic "Golden Age," the period, 1840–1870, when profits mounted high, there was no longer the same need to accumulate capital by underpaying and overworking labor. Capital accumulation, i.e., "savings," for industrial expansion could now come more easily from excess profits. In an era of plenty, stern "economic laws" could be softened to make labor likewise a recipient of the growing abundance.

During this period came Mill's final repudiation of *laissez faire*. Government intervention no longer appeared to him a useless and dangerous interference with the "law of supply and demand" and a violation of the principle of "freedom of contract," but a legitimate and necessary means of advancing the well-being of the people. The "door was thus open for social reform, which was no small triumph."[39] Mill's change of attitude had the effect of lift-

[37] Mill, *Principles*, 991–93.

[38] *Ibid.*, 938.

ing the curse pronounced by the classical economists on the working class.

It must be kept in mind, however, that Mill's change of attitude toward the working class came at a propitious time. That is why his new views were so influential in promoting the cause of social reform. The extension of the suffrage to the working class by the Reform Bill of 1867 was followed by the Forster Act of 1871, which established a national system of popular education. Mill clearly recognized that these reforms made the workers part of the public.[40] For the first time the non-propertied classes began to feel that they, like the propertied classes, had a stake in the country. In fact, the workers had the greatest stake in the country because their daily bread depended on its prosperity. Unlike the interests of their employers, those of the workers as a class could be advanced through state intervention in economic matters. Irrefutable logic and the cohesive power of millions of poor would compel the state to assume a new rôle, that of mediator between the propertied and non-propertied classes in the nation. *Laissez faire* was doomed when the control of the state passed from the hands of the middle class to those of the masses.

Mill, however, did not stop with social reform. Once he broke away from his bondage to the "laws" of classical economy, he began to look forward "to a time, when society will no longer be divided into the idle and the industrious."[41] He realized, rather vaguely it is true, that political democracy was inadequate unless a new economic system was established in harmony with its egalitarian ideas. Political struggles, after the enfranchisement of the working class, Mill argued, would be between the propertied and non-propertied classes, not, as hitherto, between landowners and factory owners. The workers were sure to question the rights of property; being no "longer enslaved or made dependent by force of law, the great majority are so by force of poverty," and are, therefore, debarred by the accident of birth from all the advantages that come from the possession of property.[42] As the workers

[39] Charles Gide and Charles Rist, *Histoire des doctrines économiques* (ed. Paris, 1926), 435.

[40] Mill, *Principles*, 758. See also "Chapters on Socialism," *Fortnightly Review*, Vol. 31, 218.

[41] Mill, *Autobiography*, 162.

[42] Mill, "Chapters on Socialism," in *Fortnightly Review*, Vol. 31, 222.

became acutely conscious of their condition, they would resent being under the tutelage of their "betters" and would refuse to be governed or treated like children. Once they saw that their interests were opposed to those of their employers the workers would not be content to remain permanently in the condition of wage earners.[43]

In view of this situation Mill began to speculate on the possibilities of abolishing the capitalist system, and became a "convert" to "socialism."[44] If a choice were to be made, he declared rather fervently, between socialism and all its uncertainties and capitalism with all its sufferings and injustices, all the difficulties of socialism "would be but as dust in the balance."[45] It is important to understand the nature of Mill's "socialism," on which much has been written that is misleading. It cannot be too strongly emphasized that Mill knew nothing of Marx or of Marxism. Never at any time did he visualize a class struggle between "bourgeoisie" and "proletariat," resulting in a revolutionary reconstitution of the social order. Not even in his most "socialist" mood did Mill believe that the workers were exploited by the capitalists. There is no anti-capitalist note, in the Marxian sense, in all of Mill's writings.

What then did Mill mean when he called himself a "socialist"? He had studied the works of the Utopian socialists, especially those of Saint-Simon and his disciples, whose criticisms of capitalism and of the competitive system started new trains of thought in his mind. Having come to the conclusion that the distribution of wealth was a matter of social arrangement, not of "economic law," would not a cooperative society accomplish a juster distribution than did the competitive society? During the Revolution of 1848 in France he had followed with keen interest the socialist phase of the movement that had proclaimed the principle of the "right to work" and had set up what were called "national workshops." Socialism, in the opinion of Mill, had become irrevocably an outstanding problem in the political life of Europe.[46]

[43] Mill, *Principles,* 756–60.

[44] Shortly before his death Mill had begun writing a book on socialism, but he did not live long enough to complete it. What he wrote on socialism appeared after his death in three articles, entitled "Chapters on Socialism," in *Fortnightly Review,* Vol. 31 (1879).

[45] Mill, *Principles,* 208.

[46] Mill, "Chapters on Socialism," *op. cit.,* 220–22.

Mill was convinced that cooperative associations of workers would retain all the good of capitalism without any of its evils. Gross inequalities of wealth would be abolished by these associations, formed "on terms of equality, collectively owning the capital with which they carry on operations and working under managers elected and removable by themselves."[47] In time the cooperative associations would be more successful in the production of wealth than individual capitalists; incentives to greater productivity would arise from the desire of greater profits by the members. The distribution of the profits would be made according to acknowledged principles of justice. Because of their greater productivity, their superior social aims, and the harmonious labor of the members, the cooperative associations would compete successfully with capitalistically organized enterprises and finally succeed in supplanting them. By this peaceful method, "without violence and spoliation," society would pass from a competitive to a cooperative basis.[48] According to Mill's new views economics no longer condemned the mass of workers to eternal poverty, as had the "dismal science" of Ricardo and Malthus. It now held out hopes of a bright and happy future for all mankind.

From the Saint-Simonians Mill got an idea as to how the existing system of economic inequality could be put to a painless death: by a severe limitation of the right of inheritance. Because of his tender regard for property rights he made a rather tenuous distinction between the right of bequest and the privilege of inheritance; the former was part of the right of property, hence inviolable, whereas the latter was part of a social arrangement that could be changed in any way to advance the common good. No one, in Mill's opinion, should be permitted to lavish riches on some one individual who had done nothing to create them.[49] That a person, because of the accident of birth, should be certain from childhood of inheriting a large fortune was, he thought, very bad for society. He proposed that only the children of the deceased should have the privilege of being heirs, and they should inherit no more than was sufficient for them to be supported in a state of "comfortable independence."[50] All above this amount, left by the testator, should go to the state to be used for the common good.

[47] Mill, *Principles*, 773.
[48] *Ibid.*, 791.
[49] Mill, *Principles*, 222.
[50] *Ibid.*, 228.

One aspect of Mill's socialism had a revolutionary tinge: his attitude toward land as property. Mill vented all his "socialism" on the landlords, not on the capitalists; in his opinion the "sacredness of property" did not apply to the same degree to land, "the original inheritance of the whole species," as it did to other forms of property.[51] As a disciple of Ricardo he regarded landed aristocracy as parasitic on a capitalist economy, whose interests were always opposed to those of the consumers and manufacturers.[52] According to Ricardo's law of economic rent the landlords were the beneficiaries of increasing incomes in the form of "rent" that flowed to them as a consequence of the pressure of population on the available supply of land. The landlords were a class, declared Mill, "whom the natural course of things progressively enriches, consistently with complete passiveness on their own part." This increase in wealth, "an unearned appendage" to the income of the landowners, was not property in the rightful sense; hence it should be appropriated by the state for the common good. In other words Mill favored the confiscation of the "unearned increment" in land values. However, Mill's sensitiveness to property rights, even to those not "sacred," caused him to moderate his actions, if not his views. What he proposed was a special tax on land that would gradually become heavier as the "unearned increment" of land values increased.[53] Mill's "modest proposal" implied the gradual socialization of land through the absorption by the state of all "unearned increment."

Mill was strongly opposed to the aristocratic English land system with its large estates inherited according to the principle of primogeniture, with tenant farmers and landless agricultural laborers. A far better land system, in his opinion, was that in France, in which peasant proprietorship and equality of inheritance were the outstanding features. He advocated as immediate reforms the abolition of primogeniture, the nationalization of all idle land, and the establishment of peasant proprietorship. However, the final solution of the land problem, he held, would be, as in the

[51] Mill, *Principles,* 233 *et seq.*

[52] David Ricardo, *Principles of Political Economy* in *The Works of David Ricardo,* edited by J. R. McCulloch (London, 1871), 202.

[53] Mill, *Principles,* 817 *et seq.* Mill's views were applied by Lloyd George in his famous budget of 1909, which laid special taxes on unearned increments in land values.

case of industry, the establishment of cooperative associations of farmers that would exploit large agricultural areas.[54]

Mill's progress in the direction of democratic liberalism in its economic aspects was definite though never very clear or very certain. Undoubtedly his sympathies were on the side of the impoverished masses, but his definite proposals were often tentative, halting, and even contradictory. His attitude toward government intervention "reflects a singular conflict of optimism and pessimism, of humanitarianism and expediency, of paternalism and self-reliance."[55] In reading Mill one never gets the impression that he had definitely, once and for all, put classical economy behind him, and was setting out on a new course of social reconstruction. Mill's new sympathies were not as deeply rooted as were his old ideas; he was "steeped from childhood in the principles of Malthus and Ricardo."[56] Always did he hesitate to repudiate the capitalist economy at which he levelled so many criticisms. Always did he hesitate to accept a socialist order at which he cast so many wistful glances. Sometimes he oscillated between belief in the efficiency and in the benefits of competitive capitalism and faith in the ultimate triumph of the cooperative social order.[57] As a consequence contradictions appear in his writings, especially in the later ones: an "economic law" will suddenly arise to confound a humane ideal; or a socialist suggestion will blandly disconcert a "truth" of classical economy. Mill's hesitations and oscillations arose from a moralistic attitude toward the social problems. Both in the definite reforms that he advocated and in his hazy vision of a cooperative commonwealth he always stressed as the great desideratum the moral improvement of the individual rather than institutional reorganization. In this sense he was a moralist turned social reformer, whose moral ideals were touched with a social emotion and directed toward social ends.

This social moralism of Mill is best illustrated by his belief in the Malthusian "law of population," a belief that he consistently held all his life. Indeed he went so far as to give a gloomier emphasis to this theory than Malthus himself, by relating the "law of population" to the "law of diminishing returns." The dispro-

[54] *Ibid.*, 762–64.

[55] F. Mackenzie (ed.), *Planned Society* (New York, 1937), 139.

[56] L. Stephen, *op. cit.*, III, 159.

[57] Mill, *Principles*, 217, 789–90, 792–93.

portion between the increase in population and the yield from land, he argued, would be increased by the diminishing returns from greater investment in agriculture. Mill's criticism of large families among the poor took on a sharpness, even a harshness, that was foreign to his kindly, sympathetic nature. Poverty existed and would continue to exist, he asserted, primarily because men followed their brute instincts without due consideration for the future of their offspring.[58] He enjoined upon the trade unions to teach their members birth control, through moral restraint, because this was a better way of raising wages than by restricting the membership.[59] Only through the restriction of population could the conquest of nature by scientific discoveries become "the means of improving and elevating the universal lot."[60] Overpopulation was a problem, Mill argued, that has confronted society under capitalism and would continue to confront it under socialism.[61] One of the reasons why he favored the establishment of peasant proprietorship in England was that, as in France, the owner of a farm would limit the size of his family in order to maintain his economic status.

Malthusianism became almost an obsession with Mill, so frequently and so insistently did he proclaim the limitation of offspring as a sort of cure-all for the poverty of the toiling masses. One is tempted to venture a psycho-analytic explanation of this obsession in Mill, in whom wide sympathies and rational judgments were generally so characteristic. As a child he was one of a large family supported with great difficulty by his father, the stern, hard-driven James Mill. Young Mill was required by his father to act as teacher to his younger brothers and sisters, an arduous task even for a precocious boy like Mill. The family of his early recollection resembled a school, attended by poor children taught by an underpaid teacher, and kept by a stern taskmaster. It is not to be wondered at that, as a consequence of his childhood experiences, Mill became a vehement Malthusian.

As a pioneer of democratic liberalism Mill made more clear and more certain than did any philosopher before him the vital

[58] *Ibid.*, 357 *et seq.* See Mill, *On Liberty* in *Utilitarianism Liberty and Representative Government*, Everyman's Library (London, 1914), 163.

[59] Mill, *Principles*, 380.

[60] *Ibid.*, 751.

[61] Mill, "Chapters on Socialism," *op. cit.*, 374.

importance of intellectual freedom in promoting political and social progress. He realized with piercing clarity and whole-souled conviction that, given intellectual freedom, every reform could be achieved—in time. Without it nothing was possible except through the accidental and spasmodic efforts of "benevolent despots," whose reforms might be abolished by their malevolent successors. Of all Mill's writings, with the possible exception of his *Autobiography,* his book *On Liberty* constitutes his best claim to be considered as a great writer. Even today *On Liberty* is regarded as the complete and best expression of the faith of a liberal in the progress of mankind through freedom of thought. In no other book is the doctrine of individual freedom, in all lands and at all times, so clearly stated and so trenchantly advocated. All of Mill's best qualities of mind and heart, all that was best in the life of this fairest flower of English liberalism, went into the writing of *On Liberty.* If ever a book was a life, *On Liberty* was the life of John Stuart Mill.

On Liberty appeared as a challenge to the wave of reaction that was sweeping Europe after the abortive Revolution of 1848. In Austria, in Prussia, in most of Italy, liberals were being hounded by the triumphant reactionaries. In France the pre-fascist Napoleon III was at the very height of his dictatorial power, and his heavy hand fell on all who were even suspected of being liberals. "Acre for acre, man for man, the political Europe of 1858 seemed not less hostile to the spirit that calls itself liberalism than seems the Europe of 1938."[62] To Mill the wave of reaction was not a "wave of the future" but a sudden and fearful storm that had burst upon Europe, that would subside after its fury was spent. Every chapter, every line of *On Liberty* breathes a spirit of faith in the inevitable triumph of liberalism. Mill's faith was justified in his own day. When he died, in 1873, the map of liberalism in Europe showed extensive conquests. France was a democratic republic; Italy, a liberal monarchy; Germany and Austria-Hungary, semi-liberal empires; Russia had abolished serfdom; and England had extended the franchise to the working class. These sweeping triumphs of the liberal cause convinced Mill, as it did his contemporaries, that the future of the world lay with liberalism.

The keynote of *On Liberty* is individual liberty, a keynote that is sounded in the introduction and is heard throughout the essay.

[62] Robert C. Binkley, "Mill's 'Liberty' Today," *Foreign Affairs,* July, 1938.

The "sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical, or moral is not a sufficient warrant."[63] This was Mill's famous formula for the preservation of individual liberty. He went further than did the eighteenth-century libertarians to whom individual liberty precluded the right of association; in a free society there was to be the state on the one hand and a mass of "atomized" individuals on the other. Mill, on the contrary, advocated the liberty of association, the right to combine for all legitimate purposes.[64] He advocated the repeal of the Combination laws that had been enacted by Parliament to prevent the organization of trade unions, chiefly for the reason that he believed in the right of laborers to combine to protect their interests.

In a democratic society the great problem, according to Mill, was to erect a bulwark of principles of liberty against a tyranny that was little obvious, "the tyranny of the majority," and against a tyranny even less obvious, "the tyranny of the prevailing opinion and feeling," against the tendency of society to impose accepted ideas and practices upon those who refused to accept them. Social tyranny was apt to be more formidable than tyrannical laws, because it left the victim "fewer means of escape, penetrating much more deeply into the details of life, and enslaving the soul itself."[65] As an Englishman Mill realized the danger from "the tyranny of the prevailing opinion and feeling" more keenly than did the liberals on the Continent. In England there was little to be feared from government interference, but much from conventional social opinion.[66] As a consequence heretical opinions among the English, wrote Mill, "never blaze out far and wide, but continue to smoulder in the narrow circles of thinking and studious persons among whom they originate, without ever lighting up the general affairs of mankind with either a true or a deceptive light."[67] The aristocratic cult of "good form" constituted an invisible coercive power to

[63] Mill, *On Liberty, op. cit.*, 72–73.
[64] *Ibid.*, 75.
[65] *Ibid.*, 68. See also 92 *et seq.*
[66] *Ibid.*, 71–72.
[67] *Ibid.*, 93.

compel conformity to its own ideas and practices by socially ostracizing those who refused to accept them. The liberty of the individual could, in this way, be as efficiently curtailed as by despotic laws and by tyrannical officials. Perhaps even more efficiently, because to be "sent to Coventry" had more terrors for some than to be sent to jail.

It is important to note that Mill did not subscribe to the eighteenth-century doctrine that freedom of opinion was a natural right. To him "opinion" implied views affecting the social order, not speculations concerning metaphysical abstractions; hence freedom of opinion was a "utility" for the practical purposes of life in order to advance the Greatest Happiness of the Greatest Number. Mill's entire concept of liberty was based on the idea that man was a rational being, interested in advancing his own welfare, which could be best accomplished by advancing the public welfare. From the free competition of ideas in the market place would emerge "truth," namely the best method to accomplish this aim. Freedom of opinion was essential to maintain this competition of ideas. Suppression of this freedom was an assumption of infallibility on the part of those in power, and was "as noxious, or more noxious, when exerted in accordance with public opinion, than when in opposition to it."[68] Even wrong opinions, when in opposition, had social value. They served to clarify and to vivify the right opinions; without them the latter would degenerate into dead formulae; hence they gave a deeper understanding to those who held the right opinions. "He who knows only his own side of the case, knows little of that."[69]

It was Mill's deep conviction that new ideas always came from minorities and from individual geniuses, especially from the latter, without whom "human life would become a stagnant pool."[70] Highly essential for the progress of the race, therefore, was the creation of an "*atmosphere* of freedom" wherein heretical minorities and gifted individuals would flourish. The dictum "that truth always triumphs over persecution" sagely observed Mill, "is one of those pleasant falsehoods which men repeat after one another . . . but which all experience refutes."[71] The greatest obstacle to

[68] *Ibid.*, 79.
[69] *Ibid.*, 97.
[70] *Ibid.*, 122.
[71] *Ibid.*, 89.

progress in a democracy, according to Mill, was the tendency of the average man to accept conventional opinions as true and prevailing practices as right. To overcome the coercive power of the prevailing social order, so powerful in England, Mill appealed to the enlightened members of the upper class, those "whose bread is already secured, and who desire no favors from men in power, or from bodies of men, or from the public" to become the leaders of unpopular causes. All they had to fear was "to be ill-thought of and ill-spoken of, and this it ought not to require a very heroic mould to enable them to bear."[72]

Mill's appeal to wealthy individuals to become leaders of unpopular causes has a familiar English ring. In his day it was sounded not only by him but also by such diverse personalities as Benjamin Disraeli, Charles Kingsley, and Thomas Carlyle. In our day the socialist liberal, H. G. Wells, never tires of making similar appeals in book after book.[73] To seek social salvation by way of the enlightened rich, who *kept their station in life* and yet led the unprivileged masses in crusades for reform, was an attitude of mind induced by the conciliatory spirit of the English aristocracy. Not even so independent an individualist as Mill could rid himself of the English tradition that an upper class, to paraphrase the remark of a character in *Alice in Wonderland,* had to keep moving in order to stay in the same place.

Freedom of opinion was not only essential to social progress; it was also the only true basis of stability in a democratic order. In the course of time, Mill reasoned, a body of universally accepted ideas would emerge from the conflict of opinions, which would grow larger as enlightenment spread. "As mankind improve," he declared, "the number of doctrines that are no longer disputed or doubted will be constantly on the increase." In this way, and only in this way, will a democratic order slowly establish a new type of stability, the outcome of a general agreement on a body of ideas that had stood the test of knowledge and of experience. The more freedom there was to criticize the existing order the greater would be the confidence in its essential rightness. In contrast to the petrified stability that is the outcome of the suppression of opinion by a tyrannical government, would be the dynamic stability of

[72] *Ibid.*, 92.

[73] See especially Wells's novels, *The New Machiavelli* and *The World of William Clissold.*

a free government, where a prevailing system continued only until new knowledge and new conditions made a change desirable. The change would then be made smoothly and easily because there would be a general agreement for joint action.

Mill's views were in harmony with the course of English history in his lifetime. The acceptance by the Tories of the political reforms inaugurated by the Reform Bill of 1832; the acceptance by the capitalists of the social reforms inaugurated by the Factory acts; and the acceptance by the landowners of the economic reforms inaugurated by the repeal of the Corn laws, were so many illustrations of ideas and policies that were universally accepted after bitter conflicts of opinion. What Mill did was to universalize English experience during the nineteenth century. French experience during the same century is a tale of quite another sort.

Enlightened public opinion was all-essential in the process of creating a body of universally accepted ideas. Mill, therefore, became an ardent advocate of popular education, which he was firmly convinced would create an attitude of mind on the part of the masses favorable to progress. He did not have much confidence in the reasoning ability of the average man; but he did have great confidence in the desire of the average man to listen to reason provided the channels to truth were kept open: appeal to facts, not to prejudices, open discussion, and freedom of assembly. It was only when these channels were kept open that the highly gifted individual, the "genius," with a new vision of truth, could make an effective popular appeal either to maintain existing laws against foolish or evil innovations or to adopt new laws to stabilize a progressive advance. No democracy, asserted Mill, "could rise above mediocrity, except in so far as the sovereign Many have let themselves be guided (which in their best times they always have done) by the counsels and influence of a more highly gifted and instructed One or Few."[74] Nothing so clearly marked Mill as a democratic liberal as his belief that the common man "can respond internally to wise and noble things," and would recognize wise leadership and support it faithfully. The bourgeois liberals of his day, Ricardo and James Mill among them, had no such faith in the common man, either in his good will or in his intelligence; and for that reason they opposed universal manhood suffrage.

The right of every man to express his opinions had no stronger

[74] Mill, *On Liberty*, *op. cit.*, 124.

champion than Mill. But he was not a "doctrinaire"; hence he did not maintain that this right was valid at all times, in all places, and under all circumstances. Mill placed limitations, and very definite ones, on freedom of speech when it was used to incite to violence. "No one pretends," he declared, "that actions should be as free as opinions. On the contrary, even opinions lose their immunity when the circumstances in which they are expressed are such as to constitute their expression a positive instigation to some mischievous act. An opinion that corn-dealers are starvers of the poor, or that private property is robbery, ought to be unmolested when simply circulated through the press, but may justly incur punishment when delivered orally to an excited mob assembled before the house of a corn dealer, or when handed about among the same mob in the form of a placard."[75] In other words, a man should not be permitted to shout "Hang the baker" during a bread riot, but he should be permitted to denounce capitalism at a public meeting.

This distinction between "opinion" and "incitement to violence" made by Mill has become classic in discussions pertaining to freedom of speech. It was the distinction made by Justice Oliver Wendell Holmes of the Supreme Court of the United States in a famous opinion. The question of freedom of speech in every case, argued Justice Holmes, was "whether the words used are used in such circumstances and are of such a nature as to create a clear and present danger that they will bring about the substantive evils that Congress has a right to prevent. It is a question of proximity and degree."[76] A democratic order can function only when desirable changes are made peacefully as a consequence of free discussion. Incitement to violence then becomes an attack on the democratic order itself in that it repudiates its very life principle.

By upholding freedom of opinion as a "utility," not as a natural right, Mill made a distinct advance over the doctrinaire liberals of the eighteenth century. He realized more clearly than they that freedom of opinion was not the luxury of an esoteric group of intellectuals who wrote books but that it was a prime necessity in a progressive society, without which reforms would be fitful, hazardous, and uncertain. Mill's observation that changes, if made as a consequence of free discussion, became a stabilizing force,

[75] *Ibid.*, 114.

[76] Schenck *vs.* U. S. vol. 249 *U. S. Reports* (1918) 52.

gave the weight of social necessity to his moral plea for the liberty of the individual. And for that very reason individual liberty became the battle cry of democratic liberalism which sought to establish a new and more egalitarian social order.

In the main the structure of the great argument in *On Liberty* still stands. In some respects it has become even stronger with the passing years. However, not all of Mill's fears or hopes, contained in the treatise, have been realized. Mill's great fear of the tyranny of the majority under democracy has proved to be groundless. As democracy spread from class to class, from country to country, from the political to the economic sphere, liberty was more cherished and more sustained. The individual found greater, not less, freedom when the state became more pervasive by regulating social and economic matters. Although Mill renounced *laissez faire,* he never entirely succeeded in ridding himself of the eighteenth-century identification of government with tyranny. He did not fully realize that government under a democracy would be in a new relation to liberty, that of a friend and not that of an enemy, as was government under autocracy. Without the liberty of the individual a democratic state could have no existence.

If Mill's fears were not realized, neither were all his hopes. It is difficult in our day to recreate the atmosphere of the Age of Mill, when there was complete faith in the power of reason in human affairs and in the inevitable triumph of the liberal cause throughout the world. It never occurred to Mill, not even in his most pessimistic moments, that any country which had once enjoyed liberty would ever lose it, and, still less, repudiate it as an outworn ideal. This is now the situation in three totalitarian nations, communist Russia, fascist Italy, and nazi Germany. The anti-liberal elements that Mill knew were reactionaries, those who rallied to the cause of the divine-right monarch, of the privileged noble, and of the intolerant priest, and endeavored to restore a vanished social order. Mill could not even imagine *revolutionary* anti-liberal forces, like communism and fascism, that now seek to create a new social order, one in which individual liberty, in the form of civil rights, and collective liberty, in the form of democratic government, would be completely and decisively rejected in favor of party dictatorship in a totalitarian state.

Mill failed to foresee any such possible development because he based his theories and hopes of liberalism on conditions in England,

an expanding industrial nation wherein liberalism found roots in a favorable soil. Apart from France, Mill knew little of the nations on the Continent; and in France, he knew little apart from the liberal and socialist elements. Mill did not realize that liberalism was not deeply rooted in the national consciousness of the peoples on the Continent; and that the feudal-military tradition, associated with privileged aristocracy and absolute monarchy, long dead in England, was a living force on the Continent, especially in central and eastern Europe. Given a revolutionary situation, these anti-liberal forces were certain to overwhelm the weak parliamentary systems that had been established in passing moments of liberal enthusiasm. This proved to be the case in 1848, and again almost a century later, after the First World War. By universalizing English experience Mill raised false hopes among the liberals of his day.

The generation that read *On Liberty* when it first appeared hailed it as a beacon light that both sought out the way to orderly progress and illumined it with a bright and steady glow. If as a consequence of the great advance of liberalism during the period 1870–1914 Mill's pleas for individual liberty became so many platitudes, it was because he had helped to make them so. And what greater contribution can a social philosopher make to human progress than to be instrumental in making bold and unpopular ideas into platitudes that every one accepts without argument!

Nothing is so painful, however, as the rediscovery of the truth of a platitude. If one desires to undergo this experience he can do no better than to read *On Liberty*. In the present twilight of liberalism, with the fascist dictators standing "on the dead body of liberty," the optimistic pages of Mill have a mournful overtone. But they also have a validity that they did not have, even in Mill's day. Freedom of the individual, which Mill so insistently, so coolly, and so logically proclaimed as the great objective of human striving, did not face in the nineteenth century what it faces today, the danger of total extinction. What the reactionaries of the past desired was merely to confine the liberty of the individual to the sphere of private life; only in the sphere of government was liberty denied to the individual by the absolute monarchs. Not so the totalitarians of today, who have abolished the distinction between public and private life, and who aim to create a social order in which the individual would be an interchangeable part in a vast

and complicated machine operated by a dictatorial *élite,* responsible to no one, not even to God, as had been the divine-right monarchs of the past. Mill's pleas for individual liberty are now more compelling than when they were bold innovations, and more persuasive than when they were accepted platitudes. Today they carry an all-embracing power of conviction to all who are fighting to save freedom from total extinction.

Mill's importance in the history of the nineteenth century rests solely on his rôle as a pioneer of democratic liberalism. As an advocate of Utilitarian philosophy and of classical economy he achieved a position of prominence by spreading the doctrines of Bentham, Ricardo, and Malthus. His views were received with great deference by the educated among his generation, to whom he appealed as the beloved and persuasive disciple of these unloved masters. But Mill would long since have passed into half-forgotten obscurity had he remained all his life a consistent upholder of the doctrines that had been implanted in him by his masters and that he advocated so persuasively. He became a more significant figure to the generations that followed his own precisely because he questioned the validity of the doctrines which the bourgeois liberals of his day had accepted with the finality of natural laws. Mill had the social imagination to see that if liberalism continued to be the expression of bourgeois ideals and the champion of capitalist interests, it would be overwhelmed by a storm of popular hatred that might spell revolution or reaction. Only by including the working class in its plans for human freedom could liberalism become a truly universal creed that would prove an inexhaustible source of inspiration to human progress. It would not be too much to say that Mill's was the most potent intellectual influence that prepared the way for the advent of democratic liberalism in England, with its wide extensions of the suffrage, with its establishment of popular education, with its emancipation of the trade unions, and with its many-sided social reforms. It was the quiet, persuasive voice of John Stuart Mill that brought firm conviction to his generation to build a new and a better England.

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PROBLEMS AND METHODS OF EARLY GREEK SCIENCE

By Heinrich Gomperz

This paper is based on a careful and prolonged re-examination of the entire material available for the study of the earliest phase of Greek scientific thought, *viz.*, the second half of the sixth century B.C.[1] The paper summarizes the *results* of this re-examination while the re-evaluation of the evidence and the re-interpretation of the fragments and doxographic reports must be reserved for separate treatment. It expresses an approach differing in two respects from the one commonly adopted. It will not be interested primarily in the views of individual thinkers, but will aim at a general description and logical analysis of the intellectual procedures characteristic of the age. And it will disregard the boundary line generally assumed to have separated the "philosophy" of ancient thinkers from their other scientific activities. Indeed, for such a separation there is not even an historical justification, since our chief authority, Theophrastus, presented the entire material indiscriminately as "Opinions of Physicists." And so far as this material itself is concerned, "philosophic" pronouncements could, if at all, be distinguished from others only by the criterion of being unusually sweeping and vague.[2] The following account will be based on the fragments of and doxographic reports on Thales, Anaximander, Anaximenes, Xenophanes,[3] Alcmaeon[4]

[1] Evidently, there would have been many advantages if the study could have been extended to cover the first half of the fifth century as well. Personal and local conditions have rendered this impracticable. Much of what will be said, however, applies to this period likewise.

[2] Indeed, in contrast to metaphysicians as well as anti-metaphysicians who agree in the view that the field of philosophy or metaphysics is different from that of science, I have come to the conclusion that it is rather by being vague and sweeping that philosophic or metaphysical differ from scientific propositions. This explains, on the one hand, why philosophy has so often been capable of exercising a real influence on the development of science but, on the other hand, also accounts for the fact that propositions when duly limited and made precise drop out of philosophy and are incorporated with a particular science. Indeed, this is only another way of stating what has so often been said, *viz.*, that philosophy has been the matrix out of which the particular sciences have gradually been developed.

[3] Xenophanes' theological and moral theories have also been analyzed, but, in order to render the material more homogeneous, have been abstracted from in this paper.

and, in part, of the earliest Pythagoreans.[5] It will fall into three sections dealing, respectively, with the *problems* discussed, the *methods of explanation* used, and the *methods of research* employed.[6]

I. Problems Discussed

The problems discussed may conveniently be assigned to four fields: Cosmogony, Paradoxology, Cosmology, Anthropology.

1. Cosmogony.

How has the world come to be what it is at present? This had long been a familiar preoccupation. But it had prompted preceding generations only to describe the origin and pedigree of the gods who were believed to preside over the sundry regions and phenomena of the universe. This entire mythological scaffolding was now removed almost at one stroke, with a thoroughness that can hardly fail to surprise us: no traditional divinity is ever mentioned, and not even a passing thought is given to the possibility that earthquakes might be caused by the trident of Poseidon, or a storm by the thunderbolt of Zeus.

In its efforts to reconstruct the development of the universe, speculation was guided by certain presuppositions or postulates, some of which, at least, must be styled *a priori*, since they are in no way obviously suggested by experience. The most basic of these was the assumption that the development must have started with a state of things almost absolutely simple and homogeneous. "In the beginning" space was filled with one homogeneous mass: either a simple stuff or an all-inclusive mixture. This, with a term of Aristotle's, may be designated as the *principle* or *beginning*.

[4] Alcmaeon's lectures were probably given and taken down before the end of the sixth century. But even if this should not have been the case, we should yet be warranted in regarding him as the representative of the medical school of Croton which, as Herodotus informs us (III 131) flourished at the time of Polycrates of Samos, i.e., about 525 B.C.

[5] The reason why the Pythagorean material could be used in part only is that most of it differs too widely in character from the rest to permit a common description. In contrast to all other thinkers of the age, the Pythagoreans did not keep science clear of mythology, and their specific approach to science by way of number-theory and, in particular, of the holy *tetraktys* could only be described and analyzed in a separate paper.

[6] Quotations, where no other indication is given, will refer to H. Diels, *Die Fragmente der Vorsokratiker, 5. Auflage, her. v. W. Kranz* (Berlin, 1934 ff.).

From this there must have arisen, in some way or other, a plurality of entities, conceived to be the essential constituents of reality as now known to us: entities which we may style the *fundamentals.* These were of two kinds: either what was generated was a set of *qualities,* such as Hot and Cold, Moist and Dry, or else it was a set of substances, such as fire, air, water and earth, or perhaps we ought rather to say, of states of aggregation, *viz.,* fire, gases, liquids and solids. In either case, these fundamentals were definitely of an abstract or *typical* nature: it was felt that what had to be pointed out was the number and kinds of material that had entered into the structure of the universe—in the same way in which a person who wanted to tell us how a house had been built might begin by stating that the materials available for the purpose had been marble, bricks, wood and iron. From these fundamentals the world was then supposed to have grown by a series of steps described differently by different thinkers, but all conforming to the postulate that these developments must be intelligible by being analogous to events familiar to us from common experience.

It is not always easy to distinguish the qualities from the substances. The Hot, e.g., manifestly tends to be confused with fire, and the Moist with water. Nevertheless, the two kinds of fundamentals differ in one important respect. The substances have definite location and are rather inert, whereas the qualities are all-pervading and possess a more dynamic character. The same duality, about a century later, may be traced in Greek medicine: there was a more materialistic view according to which man consists of the four humors: phlegm, blood, bile and black gall; but there was also a more dynamic theory conceiving the human body as a battle-ground on which the Hot strives to dominate the Cold, and the Moist the Dry.

How do the fundamentals emerge from the principle? Here two cases must be distinguished. Sometimes one of the fundamentals was held to be itself the principle (that is to say, "in the beginning" all was water, or air, or fire); in this case, the other fundamentals must have arisen from it by a process such as condensation and rarefaction, or kindling and extinction. But when the principle was different from all the fundamentals and was conceived rather as a sort of mixture, then the fundamentals must have been segregated or "separated out" from it, and for this process

of differentiation some form of movement—perhaps in the nature of a vortex—was mostly held responsible.

2. Paradoxology.

By this I mean the study of what the ancients termed the "paradoxes of nature," i.e., of *unusual* and *irregular* phenomena, such as earthquakes, thunderstorms and eclipses. By these—which formerly mythology had tried to account for—the scientifically-minded were evidently very much puzzled, and their concern with them was almost, if not quite, as great and apparently independent of their preoccupation with cosmogony. At any rate, paradoxology ranked second only to cosmogony among the topics of speculation. It is true, of course, that the unusual and irregular cannot be strictly delimited from the usual and the regular. But it is, I think, a highly significant fact that, for instance, the *eclipses* of the moon appear to have called for an explanation much more urgently than its *phases*. The latter everyone took for granted; they determined the rhythm of private and even of public life; it was the former that took people unawares, startling them and challenging their powers of understanding.

3. Cosmology.

One might have expected that the problem: What is the world like right now, what are its structure and its course? would always and everywhere be in the foreground of scientific thought. That was evidently not the case in sixth-century Greece. At that time and in that area the intellectual effort was directed to the past even more than to the present, and to the extraordinary even more than to the ordinary. The problems of cosmology were definitely felt to be less urgent than those of cosmogony and paradoxology.

Nevertheless, they too could not fail to arise. On the one hand, the cosmogonic tale had, so to speak, necessarily to lead up to a "happy end": it was impossible to recite the steps by which the world had come to be what it is without mentioning what it was like at present. If the account of the transformations heaven and earth had undergone was to be satisfactory, something had also to be said about their present shape and arrangement. On the other hand, the explanation of abnormal phenomena presupposed and called for a background of normality: it was impossible to account for thunderstorms without implying how clouds are formed and how winds arise. And even that was not all. In the cosmo-

gonic accounts certain everyday experiences had to be used as patterns which, sooner or later, to a certain extent at least, became interesting in their own right: a physicist could not, in the long run, go on asserting that all air had originally arisen from water by evaporation or, the other way round, that all water had first been formed from air by precipitation, without realizing that evaporation and precipitation were even now going on before his eyes. Finally, now and then, a thinker made a statement of a very general and very vague character, evidently meant to apply to present as well as to past developments, such as: "What comes to be, must pass away,"[7] or: "Wherefrom a thing has emerged therein it should again be resolved,"[8] and such pronouncements also may, at least in part, be assigned to the field of cosmology.

4. Anthropology.

Some thinkers occasionally touched on the problem how the human race had arisen and what the first man had been like,[9] and many had something to say about the soul, that is, about the entity supposed to leave men in death and to account for their life and their movements as long as they were alive.[10] But a systematic study of the human body was first undertaken within the guilds of the physicians.[11] Within this new field speculation on the process of begetting and on embryology corresponded to cosmogony; pathology to paradoxology; and the investigation of the healthy body, i.e., anatomy and physiology, to cosmology.

II. Methods of Explanation

To explain a phenomenon means to show that, even though at first sight it may appear very unfamiliar, yet, on closer scrutiny, it turns out not to be entirely unfamiliar, since it exhibits certain *analogies* with other phenomena, familiar to us from common experience. And a phenomenon functioning in this way as an explanatory analogy, may be styled a *thought-pattern*. Thus we may say that the methods of explanation adopted by the earliest Greek scientists consisted almost exclusively in the use of certain definite thought-patterns.

[7] Xenophanes, A 1 (19).

[8] Thales, A 13 (end); Anaximander, B 1.

[9] Anaximander, A 30; Xenophanes, A 33 (6).

[10] Thales, A 22; Anaximander, A 29; Anaximenes, B 2; Xenophanes, A 50.

[11] Actually, with respect to the field of sixth-century anthropology, the scanty remains of Alcmaeon's lectures constitute our only source material.

So far as I can see, the thought-patterns used by them were chiefly four; but the use of two others may also occasionally be traced.

1. The first of these may be termed the *biological* thought-pattern, and might, were there need, be subdivided into the biological proper, the anthropological and the theological. That is to say, phenomena are accounted for by comparing them to processes such as growth and decay, to the results of design and deliberation and to the achievements of superhuman wisdom and power.

2. A second thought-pattern may be styled *political*. The world is understandable in so far as it is analogous to a city. The regularities of nature correspond to the rules that govern civil life.

3. A third thought-pattern might be designated as that of *artistic creativity*. The scientist takes the attitude of an architect about to found a city or to lay out a temple. He feels that certain forms, measures and proportions are called for under the circumstances, and thence he immediately concludes that the facts actually conform to them.

4. Finally, there is the *mechanical* thought-pattern, that is to say, very often a phenomenon is understood by being assimilated to a procedure used in the crafts.[12]

[12] Two further thought-patterns seem occasionally to have been used. The fifth might be called the pattern of a *well-* or an *ill-ordered household*, or, in more scientific language, of *objective teleology* or *dysteleology*. In a well-ordered household things are so disposed and arranged, from time immemorial, as to serve their purpose; should this not be the case, the household would be out of order. Now, we are told (Anaximander, A 14; comp. Anaximenes, B 3) that the material available for the building of new worlds must be boundless *lest it ever fail;* but we are also told (Xenophanes, A 41a) that the sun sometimes drifts into uninhabited regions where it can do no good and that even according to the ordinary course of things (Xenophanes, A 42) while the sun is useful, the moon is not but just "runs along." The sixth thought-pattern I should term that of *pure factuality*. It is not correct that causality is a universal category of thought. Man is interested in causes only in so far as their knowledge may serve him to bring about the repetition of a desirable or to avoid that of an undesirable experience. But when he feels the occurrence of a phenomenon to be out of his reach he gives little thought to its causes. Of all the persons who state that "this is a nice morning" not one in ten thousand raises the question *why* this is the case, and the same is true with regard to the fact that a breeze is blowing from the North or that the waves of the sea are running high. In all such instances we are completely satisfied to realize that a certain state of things *just happens to be the case*. Now, it appears that the early scientists accounted for at least one type of assumed facts by assimilating them to such as "just happen to

Now, a closer study of the use made of these different thought-patterns has revealed a surprising fact which does not appear to have been given hitherto due consideration. The part played by the different thought-patterns in the investigation of different fields is not at all the same. In cosmogony the biological pattern is used without any reserve: the universe is a living being; it realizes certain schemes; it is hailed as divine. In cosmology the political and the artistic pattern seem to dominate. The kosmos is like a city; it is surrounded by the celestial vault as the city is surrounded by its walls; the order of nature is based on an equilibrium of rights and obligations (day, e.g., has a right to last a certain time, and night a corresponding time),[13] and should this order ever be violated, such violation would have to be avenged.[14] On the other hand, it is assumed to be a fact that the shape of the earth is that of a drum three times as broad as it is high and that the distances of the stars, of the moon and of the sun from the center of the earth are in the ratio of 1:2:3—not because any measurements have been made to this effect but because it is *fitting* that such should be the case.

But when we come to the field of paradoxology or, to use a still more general expression, when the problem is how to explain any concrete phenomenon whatsoever, all this appears to be forgotten and the mechanistic thought-pattern seems to hold exclusive sway. Generally speaking, the world is divine, just and beautiful; but in the concrete it is all a matter of tossing waves, clouds torn asunder, clods hitting the ground, vapors catching fire. It is well known that this kind of inconsistency (if such it be) was bitterly charged by Plato and Aristotle against Anaxagoras; what is generally not realized is that their attack might, with almost the same degree (or

take place": these assumed facts were the first movements or changes (in the nature, e.g., of condensation and rarefaction) supposed to have brought about the development of the fundamentals from the principle. In other words, the original state of things, as it existed "in the beginning," comprised change and motion—in the same sense in which the air and the sea are changing and moving. The significance of this insight consists in this, that it enables us to discard as illegitimate the concept of *hylozoism*. "When a thing x was held to move without being moved by another thing y, it must have been considered to move itself and hence to be a living thing." That is not a valid inference. The Greek scientists no longer believed that winds were moved by gods but neither did they hold them to be living beings.

[13] Heraclitus, B 94.

[14] *Ibid.*, and Anaximander, B 1.

the same lack) of justification, have been directed against any one of his predecessors.[15]

We ought not, however, to speak of the mechanistic thought-pattern indiscriminately, we ought rather to distinguish between the mechanics of solids, of liquids and of gases. The latter were

[15] In order to impress this important fact upon the reader with due emphasis it may be worth while to survey rapidly the chief pre-Anaxagorean thinkers and to show how they all, in some form or another, bear witness to the same antinomy. According to Thales (A 22) "all is full of gods," but (A 15) earthquakes are accounted for by the waves of the waters on which the earth is afloat. According to Anaximander we should suppose that the kosmos is steered by the Unaging and Immortal (B 2) and, at any rate, that what happens must conform to the standards of justice and morality (B 1); but when it comes to the explanation of eclipses (A 11, 4), thunderstorms (A 23) and earthquakes (A 28), it is all a matter of openings obstructed by dirt, of compressed air exploding and rending clouds asunder and of the impact of air-currents that penetrate beneath the surface of the earth and shake it. By Anaximenes the divine nature of the universe may have been somewhat less emphasized (A 7, 1; A 10), but the thoroughly mechanistic character of his explanations is beyond doubt. The case of Heraclitus is particularly instructive: the universe is God and it is steered by wisdom (B 67; B 32; B 41; B 108); but, as far as the phenomena of paradoxology were concerned, Theophrastus informs us that Heraclitus "accounted for almost everything by means of the exhalation arising from the sea" (A 1, 9)—which, however, was not the only one he assumed, since he held that there were exhalations from land as well as from the sea and that in both cases they might be either bright or dark. Similarly, Xenophanes was most emphatic in proclaiming the divine character of the universe, or at least of the heavens: God is all eye, all ear and all thought. But, as is plain from the doxography, the idea never occurred to him that this principle of divine foresight might be used for the purpose of accounting for any details in the natural course of events: this course is determined on the one hand by the law that land and sea are alternately mixed up with and again separated from each other and on the other hand by the fact that from the sea there arise vapors soon transformed into clouds which in part are re-transformed into water, while others catch fire and, being borne along by air-currents, produce the illusion of luminaries moving in permanent orbits. In Parmenides the duality of apparently incompatible points of view has always been felt to be most striking. In "truth" all things are one; there is no change; nothing moves. But according to "appearance" the world has come to be by the interaction of two elements, light and night (B VIII 53 ff) and it is on the prevalence of these that even now the differences of youth and old age (A 46 a), of waking and sleeping (A 46 b) and even of superior and inferior intelligence (B 16) depend. We cannot trace such a duality in Melissos, but if our doxography is reliable, even Zeno after having demonstrated (or before demonstrating) the impossibility of any multiplicity did not disdain to indicate how the universe had been built up out of a plurality of elements (A 1 29). And so we have come down to poor Anaxagoras who was so severely taken to task for an inconsistency which certainly was not specifically his own.

the universal favorite. The boiling of water and the burning of incense provided the most widely used patterns. Steam and smoke, vapors and exhalations were felt to be the panaceas for human ignorance: being for the most part invisible and intangible they were excellently qualified to play the rôle which later fell to *forces* and *energies* and which Descartes, for instance, assigned to the *vital spirits.*

The most significant scientific issue of the age (and of the ages to come) concerned the heavenly bodies (whose divine nature was, in most cases, ignored though not denied). Should their interpretation be based on the mechanics of gases or of solids? One party[16] held that the world was uniform with regard to stuff and to law; thence they concluded that the heavens were but part of the atmosphere and their study an extension of meteorology: the celestial luminaries were burning vapors or clouds. The other party[17] felt that "the world above the moon" differed essentially from that beneath her: it was built out of another stuff and on a different plan; it formed the subject-matter of another science, and the regularity of its revolutions had to be accounted for by mechanical devices such as wheels and revolving spheres.

And this discussion led up to a further dilemma. If the heavenly bodies were solids, they were likely to be persistent: today's sun, e.g., would be conceived as identical with yesterday's, and its orbit would have to be worked out in such a manner as to account for its daily return from West to East. But if the sun is but a burning cloud, this intricate and puzzling problem might be dispensed with altogether, or rather, it would reveal itself as a pseudo-problem: the sun may then be conceived as being formed anew each day and instead of assuming a persistent *object* "sun" it will suffice to posit a meteorological *law* of daily sun-formation.[18]

III. Methods of Research

In a general way, the following statements may, I think, be made with reasonable assurance. "As might have been expected in an age whose central problem was cosmogony, i.e., a set of unobservable and unrepeatable phenomena, and which, moreover,

[16] Anaximenes, Xenophanes, and later Atomists and Epicureans.

[17] Anaximander, the Pythagoreans and later Plato and Aristotle.

[18] This was the view of Xenophanes, whom Alcmaeon and Heraclitus followed only in part.

lacked all magnifying devices, the need for increased factual knowledge and for testing assumptions by experience was hardly felt. The facts to be explained were supposed to be matters of common knowledge, and any endeavor to account for them was essentially like the effort to solve a riddle. A scientific hypothesis was a (more or less fortunate) guess and the only criterion of its validity was its intrinsic plausibility. No one, however, could feel quite sure of having guessed aright and hence dogmatic pronouncements were sometimes quaintly introduced by professions of universal agnosticism."

As soon as we try to be more specific than this, we have to grapple with a very serious difficulty: were two thoughts linked together by an ancient scientist or by a late doxographer? Even with regard to such questions there will be probabilities, but the degrees of these probabilities will be deplorably small.

As a rule it seems that views were stated in a dogmatic fashion. Sometimes such views were in agreement with tradition or with opinions expressed by predecessors. But often there was evidently deliberate disagreement with "what others have held."[19] However, within the domain of science (as distinguished from theology and politics) the grounds for such disagreement were hardly ever stated in so many words. Sometimes the reason why a scientist differed from his predecessor may be inferred from the views by which he replaced the latter's theories;[20] but that is the exception rather than the rule.

The theories themselves do not lack complexity. Very often, several theories are interdependent and express a connected view. And even one and the same theory may sometimes be of considerable complexity. A theory, e.g., concerning the causes of earthquakes is organized in the following way:[21] "All quakes are directly caused by clods breaking away from the mass of the earth. This process of breaking away may itself be due to four or five different causes" (three of which a predecessor had apparently already pointed out). "The breaking away of the clods produces quakes in two different ways. In the first place, while the clods break

[19] Anaximenes, A 7 (6).

[20] Anaximenes' theory of quakes compared with that of Anaximander, according to Seneca, *Nat. Quaest.*, VI 10.

[21] Same passage, for which there are very specific reasons not to hold Seneca responsible.

away, the masses from which they break away are shaken by an effect of recoil. Secondly, when the clods reach the ground, they either hit a solid surface or fall into stagnant waters: in the former case they cause repeated shocks like a ball falling to the ground; in the latter they produce a flood like a stone thrown into a pool." In this case as also in a few others *analogies* are adduced with the evident intent of carrying *conviction,* but in more numerous instances the function of analogy is simply to illustrate an alleged state of affairs (e.g., "the stars move round the earth as the hat moves round the head").[22]

Arguments are sometimes of a purely tautological character, for instance: "Clouds, rains, springs, streams all stem from the sea. For if the sea were not, all these would not exist. But actually, the sea does produce them."[23] But in the great majority of cases arguments are based on general contentions implied and—if one may say so—dogmatically presupposed, though mostly not explicitly stated. These general contentions are of two kinds: they are either mere *postulates* or *assumptions,* more or less independent of experience; or else they are rather statements of *general facts* based on a more or less sweeping and superficial induction and thus coming close to what we should term *laws of nature.*

The *postulates* again cover statements of various types. Some amount to moral demands and judgments of value. "Violations of the order of things must in justice be avenged."[24] "The material for the building of new worlds must never fail."[25] "Whence a thing has arisen, thither must it return."[26] Some of these postulates that we feel tempted to style purely metaphysical express what we might term exigencies of thought, e.g., "Qualities persist even when 'dominated' by their opposites and hence not traceable in experience";[27] "Where there is apparent change, there must be an unchanging substrate."[28] Very often a postulate expresses

[22] Anaximenes, A 7 (6). Here is a list of demonstrative and another of merely illustrative analogies. *Illustrative:* Thales, A 14, A 15; Anaximander, A 10, A 11, A 21; Anaximenes, A 7 (6); A 12, A 14, A 15, A 19, A 20. *Demonstrative:* Anaximenes, A 17, A 20 (?); B 2; Seneca, *N. Q.,* VI 10; Alcmaeon, A 5 (25), A 12; Anon. Pyth., B 40 (?).

[23] Xenophanes, B 30.

[24] Anaximander, B 1; Heraclitus, B 28, B 94.

[25] Anaximander, A 14; Anaximenes, B 3.

[26] Thales, A 13; Anaximander, B 1.

[27] Alcmaeon, B 4.

simply a characteristic feature of a scientist's theory which to him appears to be self-evident and not to need any proof, e.g.: "The earth is a flat object";[29] "The earth is freely suspended in the center of the universe";[30] "The distances of the heavenly bodies from the earth correspond to the proportions underlying the musical intervals";[31] "There must have been a first man."[32] Finally, an hypothesis that affords a possible and convenient explanation of a fact is often dogmatically asserted as true, no thought being given to empirical verification even where this, or rather the falsification of one, would be easy or, at any rate not impossible. As illustrations, consider the following statements: "Since in death the blood completely recedes from the veins, it must incompletely recede during sleep"[33] (and no one is struck by the fact that a person asleep is neither less warm nor less rosy than one awake). The female mule is barren because her womb is not sufficiently open to admit the sperm; but the male mule is barren likewise, his sperm being too cold and too light"[34] (and we may be sure the female mule was not dissected nor was any effort made to weigh the sperm of the male or to determine its temperature). "The child follows the sex of that parent who has contributed 'more' during the act of generation."[35]

Laws of nature, again, exhibit extremely varying degrees of generality, and range from such as are almost true through those that are half-true (or at least contain an element of truth) to the entirely fantastic. The following list may give an idea of them. "What comes to be, must pass away."[36] "All things age."[37] "A thing x does not move another thing y unless x have a soul."[38] "A thing x which is at rest does not move unless it be overpowered by another thing y." (This, incidentally, is a crude way of empha-

[28] This point of view, definitely over-emphasized by Aristotle, nevertheless doubtless underlies passages like Anaximenes, A 7 and Heraclitus, B 30–31.

[29] Anaximenes, A 20.

[30] Anaximander, A 26.

[31] The fundamental assumption of Pythagorean cosmology.

[32] Anaximander, A 30.

[33] Alcmaeon, A 18.

[34] Alcmaeon, B 3.

[35] Alcmaeon, A 14.

[36] Xenophanes, A 1 (19).

[37] Anaximenes according to Seneca, *N. Q.*, VI 10.

[38] Thales, A 22.

sizing one aspect of the principle of inertia.) "If a thing x be surrounded by several other things y, z, u . . . , it can be overpowered and moved by that one only to which it is closest in space."[39] "As a consequence of continuous evaporation the sea must gradually disappear."[40] "Where there is a break, there is a recoil."[41] "The factors responsible for the characteristic weather of the different seasons must be such as are capable of causing heat and cold," and hence the stars cannot be such factors.[42] "Flat objects remain afloat" (on air as on water).[43] "Clouds moved in certain ways begin to glisten."[44] "It is things hollow that sound."[45] "Sounds are produced by moving bodies and their pitch is in proportion to the velocity of these bodies." But "a sound may be heard only against a background of silence."[46]

Perhaps the most characteristic feature of sixth-century science, however, is its attitude toward factual verification. That it tells in favor of an hypothesis or assumption if facts in agreement with it may be pointed out was not at all overlooked. On the contrary, in a considerable number of instances it is possible to show that facts on which a theory had plainly not been built to begin with were subsequently introduced as supporting or corroborating it, in a spirit that might adequately have been expressed by words such as "*And indeed* it is the case that . . . ." But two things, it would seem, were never realized. First, that it makes a great difference whether a corroborating fact is a *real* fact or whether it is itself only *an assumed* and hypothetical fact—indeed perhaps no less hypothetical than the hypothesis it is supposed to corroborate. In the second place, it was completely overlooked that facts may bear out a theory *to a greater or lesser extent*. A theory was felt to be an indivisible whole and was supposed to be corroborated *in its entirety* by any (real or assumed) fact in agreement with any assumption or belief forming part of the theory. This important point may perhaps best be illustrated by one particular instance which, moreover, is also of special interest because—quite excep-

[39] Anaximander, A 26; Parmenides, A 44.
[40] Anaximander, A 27.
[41] See note 37.
[42] Anaximenes, A 14 end.
[43] Anaximenes, A 20.
[44] Xenophanes, A 39 and 45.
[45] Alcmaeon, A 5 (25).
[46] Anonymous Pythagoreans, B 35.

tionally!—the corroborating facts were not matters of common knowledge, but had been discovered by the scientist himself by means of specific observations and investigations. Xenophanes had figured out a theory according to which sea and land will gradually be mixed up with each other until a state of universal "muddification" is reached, incompatible with the survival of mankind. Then, sea and land will little by little be separated again, the mud will be dried up and a new race will be formed. And such alternating periods will succeed one another again and again, indefinitely. Now, *in support of this theory,*[47] Xenophanes adduced two series of observations. First, shells are found in mid-land and even on hill-tops. Secondly, in certain places (Malta, Syracuse, Paros) the rock exhibits imprints of fossils that could only have originated at a time when the rock was mud and must have been hardened as the mud was dried up. Xenophanes did *not* see that these facts do not bear out either his assumption that "muddification" took place everywhere at the same time or his contention that a new period of "muddification" is impending, but that the facts quoted by him would in themselves tell rather in favor of the view of one of his predecessors, according to which the cosmic process is one of progressive desiccation, ending with the total disappearance of the sea.[48] This was because he compared *his theory as a whole* with the evidence and held the latter to corroborate the former since it was in agreement with *one element* of his hypothesis.

In other instances we are less completely informed, but the methodological situation was probably much the same. I subjoin a list (characterizing such "corroborating" facts as are purely hypothetical by a question-mark.)[49]

"The earth floats on the sea. Quakes take place when it is rocked by the waves. *And indeed,* when there is a quake, new springs appear in most cases, comparable to the water that leaks into a boat rocked by the waves."[50] "The regularity of the celestial movements is due to the fact that the orbits are in truth wheels of opaque vapor containing fire. This fire is visible through circular openings in the wheels and it is these openings that we

[47] "Saying he disposed of the following proofs," Xenophanes, A 33 (5–6).

[48] Anaximander, A 27.

[49] It must be understood that the arguments referred to in the following list are *reconstructions* and are not, *as such,* to be found in the evidence.

[50] Thales according to Seneca, *N. Qu.,* VI 6.

designate as sun, moon and stars. *And indeed,* it is when these openings are obstructed (?) that the so-called eclipses ensue."[51] "Earthquakes are due—directly or indirectly—to cracks in the earth's surface caused either by desiccation or by heavy rains. *And indeed,* quakes mostly occur in times either of drought or of floods."[52] "Heat is the effect of expansion, cold of compression. *And indeed,* the breath is cool when compressed by the lips but warm when allowed to expand."[53] "When the winds tear a cloud asunder, a flash of lightning is seen. *And indeed,* a flash of white light is also seen when the water is split by the oars."[54] "The brain is the general organ of sensation. The sensations are conveyed from the particular sense-organs to the brain by certain channels. *And indeed,* the senses fail a person who suffers a concussion of the brain because in such a case the brain is displaced (?) and thereby those channels are interrupted(?)."[55] "We could not see if there were no fire in the eye. *And indeed,* this fire is seen when the eye is hit."[56] "Disembodied souls live on mere odors. *And indeed,* even some animals (bees) support themselves in this same way."[57]

Of the five thinkers on whose theories our discussion has mainly been based the two latest introduced their expositions by a sort of skeptical proviso. "The precise nature of the gods and of all the things I am discussing no man has ever beheld nor will there ever be such a one as beholds it . . . (mere) opinion is spread out over them all. . . . But in so far as they have revealed themselves to human vision . . . let us take these opinions as (at least) resembling the truth."[58] "With regard to things mortal the gods attain to precision, but as far as men may judge by indications. . . ."[59] And in the following century this chorus was joined by at least two more voices: "The whole (truth) may not be beheld by men nor learned about or grasped by their minds and even thou mayst learn

[51] Anaximander, A 11 (4).
[52] Anaximander, A 28.
[53] Anaximenes, B 1.
[54] Anaximenes, A 17.
[55] Alcmaeon, A 5 (26 end).
[56] Alcmaeon, *ibid.* (beginning).
[57] Anonymous Pythagoreans, B 43, taken with Heraclitus, B 98.
[58] Xenophanes, B 34, 36, 35.
[59] Alcmaeon, B 1.

. . . not more than what mortal thinking power reaches up to."[60] "True knowledge of reality is not available, but I define it as best I can."[61] We have good reasons for assuming first, that these skeptical introductions did not weaken or otherwise modify the dogmatic tenor of the subsequent expositions, and furthermore, that they were meant to cast a shade of doubt on particular explanations rather than on general principles, postulates and assumptions.[62] Indeed, we must realize the paradoxality—not to say the enormity—of the undertaking of making pronouncements and even writing books on those regions and domains of nature which were supposed to be, once for all, excluded from human experience or, as one of those authors put it himself, "on the non-apparent."[63] If they felt that, here, they were on slippery ground, their feeling was only too justified. And yet it is difficult to believe that the curious unison of four (more or less) independent voices should be due exclusively to the operation of a scientific conscience that made itself felt in four introductions, only to be forgotten or neglected in the works themselves. Perhaps there was an extrinsic motive contributing to the result. To concern oneself with things "high up and beneath the earth" was not in good repute. It was the province of diviners, astrologers[64] and treasure-hunters. It is not at all improbable that the earliest scientists found it to be in their interest to draw a line of demarcation between all such people and themselves: "They may pretend to have certainty concerning these hidden things; we simply communicate our ideas."[65]

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[60] Empedocles, B 2.

[61] Ecphantus, no. 1.

[62] Xenophanes, in particular, certainly exempted theology from the sphere of possible doubt, since here he started from what a god *had* to be in order to be a god. In this I entirely agree with Mr. Deichgraeber, *Rheinisches Museum* (1938), 30.

[63] The title Alcmaeon, B 1, gives as that of his lectures.

[64] Astrologers in the modern sense: Heraclitus, B 105.

[65] But it must also be noted that all the four skeptical utterances come from Lower Italy and Sicily (Elea, Kroton, Akragas, Syracuse). Possibly the motive indicated, or some other motive, operated in those parts with more than its usual force. The region was a hot-bed of religious sects and mysteries. Perhaps a prosecution for impiety might have been more likely and at the same time more dangerous there than elsewhere.

THE DISCOVERY OF FORM

By John Elof Boodin

We must go back to the Greeks for the discovery of form. It is not my purpose to give a history of the concept of form. I shall only touch some high points which I think are relevant to the problem today. We may say that Plato is the discoverer of form, one of the most fundamental concepts in the history of thought. There has been an attempt to trace the concept of form back to the Pythagoreans. But this attempt is not supported by Aristotle, who gives us our only relevant information. It is true that the fundamental reality, according to the Pythagoreans, is numbers, and that Plato in his latest phase tried to express the nature of things as numbers. But for the Pythagoreans numbers are sensible things—bodies out of which the world is made, "agreeing apparently with the other natural philosophers in holding that reality was just what could be perceived by the senses, and is contained within the compass of the heavens."[1] Aristotle's interpretation of the relation of the Pythagoreans to Plato is that the Pythagoreans agreed with Plato "in giving numbers an independent reality of their own; while Plato differed from the Pythagoreans in holding that this reality was distinguishable from that of sensible things."[2]

The confusion has come from the fact that the Greek word εἶδος, in popular usage, means *shape* (as does the English word, form) and that is the sense in which the Pythagoreans used it. A geometrical figure has shape, εἶδος. Eurytus, a disciple of Philolaus, in the last generation of the ancient Pythagoreans, tried to express the nature of man "by means of pebbles which he arranged in a figure (εἶδος) having the shape of a man."[3] Form, therefore, could be perceived by the senses.

Plato's form has to do with internal structure, and thus can be grasped only by the mind, and is distinguished from sensible appearance, though the latter may reflect or, in a measure, incarnate structure. This structure is independent of sense ap-

[1] *Metaphysics*, A, 8, 990ᵃ, 3. See John Burnet, *Early Greek Philosophy* (1930), 286 f.

[2] Burnet, *ibid.*, 287.

[3] Burnet, *Greek Philosophy—From Thales to Plato*, 90.

pearances. It exists in its own right—the structure of beauty, the structure of an atom—but by grasping it we grasp the real meaning of the sensible world. Mainly, what Plato had in common with the Pythagoreans was the word *εἶδος, idea,* but the word was used in a different sense. The same may be said of Democritus, who also spoke of *εἶδος*—the shape of the atoms. Neither the Pythagoreans nor Democritus had any conception of internal structure—structure as such. Such a conception must wait for the discovery of the concept, which was the work of Socrates and Plato.

The Neo-Pythagoreans were eclectic and helped themselves to what they wanted of the results of the Academy. But in order to justify their plagiarism they attributed everything to Pythagoras. The erudite and uncritical Proclus, in the fifth century A.D., was taken in by their propaganda, and A. E. Taylor was taken in by Proclus.

We learn from Aristotle that Socrates was "busying himself with ethical matters, and neglecting the world of nature as a whole but seeking the universal in these ethical matters, and fixed thought for the first time on definitions." According to Aristotle, he did not hold to the forms, i.e., forms independent of sensible appearance. To the discerning reader Plato has given a clear account of where Socrates leaves off. In the *Symposium,* Socrates is represented as familiar with the lesser mysteries—temperance and justice in states and families—but when it comes to the greater mystery, the form of beauty, "absolute, separate, simple, and everlasting," Socrates is ignorant and is obliged to learn from Diotima, an oracle, who knows the future.

For the cosmic significance of form we naturally look to the *Timaeus,* Plato's immortal cosmological dialogue. Plato informs us that "the father and maker of the universe is past finding out; and even if we found him, to tell of him to all men would be impossible." It is, therefore, necessary for Plato to convey his meaning of Him in human metaphor. And the metaphor of the artist is congenial to the Greek mind. The story of creation is told by the almost mythical Timaeus: "Let us, then, state for what reason becoming and this universe were framed by him who framed them. He was good; and in the good no jealousy in any matter can ever arise. So being without jealousy he desired that all things should come as near as possible to being like himself."[4] (It should

[4] *Timaeus,* 29, Cornford's translation.

be noted that Plato says "as near as possible to being like himself," not to a pre-existent system of forms.) "In the likeness of what animal did the Creator make the world? It would be an unworthy thing to liken it to any nature which exists as a part (*species*) only; for nothing can be beautiful which is like any imperfect (incomplete) thing; but let us suppose the world to be the very image of that whole of which all other animals both individually and in their tribes (*species*) are portions (καθ' ἓν καὶ κατὰ γένη μόρια). For the original of the universe contains in itself all intelligible beings, just as this world comprehends us and all other visible creatures. For the Deity, intending to make this world like the fairest and most perfect of intelligible beings, framed one visible animal comprehending within itself all other animals of a kindred nature."[5]

Plato's dramatic language has, of course, given rise to various interpretations. How are we to understand "that living Creature of which all other living creatures, individually and in their species, are parts"? According to Cornford (who here follows the tradition), "the model called the 'intelligible living creature' is a generic Form containing within itself the Forms of all subordinate species, members of which inhabit the visible world. . . . The generic form must be conceived, not as a bare abstraction obtained by leaving out all the specific differences determining the subordinate species, but as a whole, richer in content than any of the parts it contains and embraces. It is an eternal and unchanging object of thought, not itself a living creature, any more than the Form of Man is a man. It is not a soul, nor has it a body or any existence in space or time. Its eternal being is in the realm of Form."[6] I think the refutation of such a picture of "bloodless categories" is found in the *Sophist:* "And, O heavens, can we ever be made to believe that motion and life and soul and mind are not present with perfect being? Can we imagine that being is devoid of life and mind, and exists in awful unmeaningness an everlasting fixture?"[7]

In the *Philebus,* where Plato does not use metaphorical language, the cosmos, the macrocosm, is conceived as a body gathering up, in their pure states, the elements which are impure in our bodies

[5] *Timaeus,* 30, Jowett's translation. Parentheses are mine.

[6] F. M. Cornford, *Plato's Cosmology* (1937), 40. For Plato, the species, man, is a living creature, but a larger form than that of individual man.

[7] *Sophist,* 249 (Jowett's translation.)

and having a soul in every way fairer than our soul and the source of our soul; and having wisdom and mind, which cannot exist without soul, and which is a presiding cause of no mean power. This cosmic organism is not created but is the creator of order. Here we have a development of the original of the *Timaeus*. And surely this is not just a bodiless, soulless, mindless system of forms. It is necessary to grasp the organismic conception of Plato to understand his meaning. This makes analysis a "carving" (though not necessarily a physical carving) which is accompanied by synthesis, retracing the relations to the whole.

In the *Parmenides* we have an explicit statment in regard to the individual forms: "And yet, Socrates," said Parmenides, "if a man, fixing his attention on these and the like difficulties, does away with ideas of things and will not admit that every individual thing has its own determinate idea which is always one and the same, he will have nothing on which his mind can rest; and so he will utterly destroy the power of reasoning as you seem to me to have particularly noted."[8] Here we have a clear statement of the final indivisible form which itself exists within larger wholes. Here we have the key to what Plato hoped to accomplish by the method of division.

In the period of the great ethical dialogues, including the *Republic,* forms are objectively normative. They are structures of the real world. While they transcend the world of becoming, they give beauty and truth to this world which can only imperfectly mirror the real world because of the character of matter or necessity, though the latter lends itself "for the most part" to reflecting the former. In the period of the systematic dialogues, Plato's concern is to show more precisely the relation of forms to the world of becoming, (a) by creation in the *Timaeus,* and (b) by division in the *Sophist, Statesman, Philebus,* and *Phaedrus.* Division[9] is a method of analysis, within the fullness of being, of the living intelligible organic whole, following, like a good carver, the natural joints (*Phaedrus*) until he arrives at the indivisible parts which are also wholes having their own complexity with reference to their

[8] *Parmenides,* 35, Jowett's translation.

[9] Julius Stenzel, in *Plato's Method of Dialectic,* trans. D. J. Allan, has a learned discussion of division (διαίρεσις) and "atomic form" and the accompanying synthesis (συμπλεκή εἰδῶν) but it is not clear what he means by "atomic form." See especially chapter V.

distinguishable constituents (letters) and also their relations to the more comprehensive wholes, up to the final comprehensive intelligible organic whole which contains in its living unity all the constituent wholes down to the individual intelligible forms, just as this visible world contains the whole hierachy of visible forms, including us and all living things. This means the existence of the living intelligible whole, not as a mere system of forms, but as a living whole. Otherwise the process of division would fail to give meaning to the world of becoming. Plato has not abandoned the normative ideals as the ultimate structure of reality. The good and the beautiful and the just retain their significance as objective norms in the evaluation of the world of becoming. But the forms now are shown to give structure to the sensible world of individuals. At any rate that is Plato's intention.

The *Seventh Epistle* is now generally recognized as the work of Plato. In 342 d, e, Plato is concerned to distinguish the actual object of knowledge, which is true reality, from the processes by means of which we strive to attain knowledge of it, such knowledge being relative and uncertain (a marvelous analysis). As the actual object of knowledge, he speaks of mathematical objects, "the good and the beautiful and the just," and "every animal." The reassertion of the universal objective norms does not conflict with the assertion of "every animal."

Plotinus feels that he is a true Platonist, and his statement of the relation of the individual forms to the whole reads like a paraphrase of the *Timaeus*. "There is a reason, then, why the soul of this All should be sent into it from God: In the same way the soul of each single one of us is sent, that the universe may be complete; it was necessary that all beings of the Intellectual should be tallied by just so many forms of living creatures here in the realm of sense."[10]

Aristotle corroborates our interpretation, but also points out the difficulty. He discusses the relation of perishableness to the essence of individuals and comes to the conclusion that perishableness must be involved in the essence of some individuals. He points out the problem that this would raise for the believers in forms. "Evidently, then, there cannot be forms such as some maintain, for

[10] *Ennead*, IV: 8, 1. Stephen MacKenna's translation. See in this connection, A. O. Lovejoy, *The Great Chain of Being* (1936), 339, Note 35. I am sorry Lovejoy lost his nerve.

then one man [the sensible individual] would be perishable and another [the ideal man] imperishable. Yet the Forms are said to be the same in form in the individuals and not merely to have the same name; but things which differ in kind [as the imperishable and perishable] are farther apart than those which differ in form."[11] Aristotle points out rightly that the difference between the intelligible forms and the sensible world still remains. It also remains for Aristotle, who persistently asserts that forms are eternal. How could perishableness be a character of an eternal form? Yet the individual is ultimate for Aristotle, as it is for Plato; for Aristotle it is the only thing that has existence. Aristotle holds that under the moon, i.e., in the world of becoming, form is never completely realized. It seems to me that Plato has the advantage over Aristotle, because Plato has an intelligible world in which the forms exist, whether they are realized in the world of becoming or not, but if Aristotle's forms are not realized in the world of matter, where could they exist?

The fundamental difference between Plato and Aristotle is that while Aristotle recognizes only the individual forms as existent (οὐσία), Plato recognizes the existence also of more comprehensive forms. There are forms of species of living things which in turn are portions of the living whole-form. Aristotle cannot see how there can be a "form over forms," because for him the individual form is the only form. But there is more to man than men, there is the history of man, which is part of the history of life. Plato could express this intuition only as dramatic creation.

We may approach the problem of the individual from its relation to knowledge. To know the individual is to know how he differs from other individuals. Plato faces this problem in the *Theaetetus*. If we try to define the individual in terms of general predicates which also apply to others—nose, eyes, mouth, even snub-nosedness and prominent eyes—we would have no more notion of Theaetetus than of others who resemble him. "Surely I can have no conception of Theaetetus until your snub-nosedness has left an impression on my mind different from the snub-nosedness of all others whom I have ever seen, and until your other peculiar-

[11] *Met.*, 1059a. W. D. Ross' translation. The explanatory parentheses are also suggested by him. Ross' translation of the *Metaphysics* is used unless otherwise stated.

ities have a like distinctness; and so when I meet you tomorrow the right opinion will be recalled." "Right opinion implies the knowledge of differences" (209). But this is tautology, not definition. You cannot define the individual in terms of general predicates.

The method of division lands us in the same place. We finally come to the indivisible form—the unique difference. This can only be said to be known in relation to a hierarchical system of forms which gives the individual its place, but it does not define the individual form as such. In the *Sophist* Plato has an elaborate definition of the sophist and in the *Statesman* of the statesman. In each case he uses the method of division, in which he distinguishes narrower forms within larger forms until he thinks he has hunted down his quarry—the sophist or statesman—then recapitulates the larger forms, narrowing the circle until he is supposed to have caught the indivisible form—the sophist or statesman. But the quarry has escaped the net, and Plato has just a generic form—any sophist or any statesman. It is the dilemma of the *Theaetetus*.

Aristotle struggles with the same problem with the same result. For Aristotle only the individual is substance, ultimate reality (οὐσία). Aristotle labors with the conception of substance. "Why is this individual thing, or this body having this form, a man? Therefore what we seek is the cause, i.e., the form, by reason of which the matter is some definite thing; and this is the substance of the thing."[12] In both Plato and Aristotle we have the conception of wholism. In the *Theaetetus* the syllable is not the letters but a unique form. So in Aristotle. "Since that which is compounded out of something, so that the whole is one, not like a heap but like a syllable, now the syllable is not its elements, *ba* is not the same as *b* and *a*. . . ." The syllable is something "other" than its elements. "And this is the substance of each thing, for this is the primary cause for its being."[13] Universals do not exist. There are no universal causes. Only individual causes exist. Not man but Peleus is the "originative principle of Achilles."[14] This rules out medieval realism.

But the logical difficulty of definition still remains. Can substance be defined? Aristotle seems to contradict himself. Only

[12] *Met.*, Bk. VII, 1041b.
[13] *Met.*, Bk. VII, 1041b.
[14] *Met.*, Bk. XII, 1071a, 19–24.

substance is definable.[15] But substance cannot be defined.[16] What he means seems to be that substance can be defined in the sense that it can be subject and have predicates. But substance is not exhausted in its predicates. There is the form of the individual itself, which is expressed in a formula. The formula is internal to the individual. Substance is an atomic form. It has nothing in common with anything else.[17] Therefore no universal can be substance. This rules out species, even *infima species*. Man or horse is not substance.[18] On the other hand, contrary to Aquinas, "matter does not create a difference, for it does not make individual men forms of man though the flesh and the bones of which this man and that man consist are other. The concrete thing is other (ἕτερον, diverse) but not other in form, because in the definition there is no contrariety. This is the ultimate indivisible form. Callias is definition + matter."[19] Predicates are universals; and substance is not a combination of universals, because universals are applicable to more than one thing.[20]

Aristotle tries Plato's method of division. "There is nothing in the definition except the first named genus and the differentiae."[21] The differentiae are the important part: "the definition is the formula which comprises the differentiae." But we must go on in the division to find the differentia of the differentiae, etc. "Clearly the *last* differentia will be the substance of the thing and its definition." We thus reach a limit of definition when we reach "forms that contain no differences." As Aristotle says elsewhere, "the substance of each thing and the essence of each . . . is the limit of knowledge; and if of knowledge, of the object also." What have we then except what Plato got in the *Theaetetus*?—the perception of differences, which he rejected as definition because the statement of it is tautology or merely verbal. Aristotle is clear that as regards sensible individuals there can be no knowledge in the logical sense. Sensible individuals can be reached only through perception and intuitive reason. But Ideas also are individuals and cannot be defined.[22]

[15] *Met.*, Bk. VII, 1031a, 1.
[16] *Met.*, Bk. VII, 1040a, 28, 29.
[17] *Met.*, Bk. VII, 1038b, 35, 36–1039a; 1040b, 23 ff.
[18] *Met.*, Bk. VII, 1035b, 28, 29.
[19] *Met.*, Bk. XII, 1058, 5 f. (not Ross' translation).
[20] *Met.*, Bk. VII, 1040a, 10 ff.; 1037b, 24 ff.
[21] *Met.*, Bk. VII, 1037b, 28 ff.

I think it is evident that Plato and Aristotle started at the wrong end. Plato started with a large form, ultimately with the form of the universe, and tried to discern smaller forms within it—down to the particular individual form; and according to Xenocrates, he went on dividing until he arrived at the five solids, thus trying to bridge the gap between the organic and the inorganic. In the *Timaeus* he had tried to discover the atomic forms of physics—complex, yet wholes. Modern science starts with small forms—with individual situations and tries to build out from these. It is easier to discover the structure of an atom than the structure of the universe, though Plato was right that they are inter-related, as we are beginning to discover. Aristotle started with a large universal, a genus, and by division and the adding of differences tried to "approach" the individual. But we cannot arrive at the individual by the subject-predicate method; and Aristotle saw this, but gave up. We know that individual form—the structure of an atom, of a personality—is a creative discovery, suggested by the mind, but tried out by observation and experiment. We do indeed proceed from a general background of knowledge and make use of general principles, but the test is creative insight into the particular situation. This procedure required a more refined logic than the subject-predicate logic. For the most part we rely, in practical life, upon common sense, condensed into intuition, as the Greeks did.

Aristotle's great contribution to science is in biology, including psychology. Here he repeats again and again that "the soul is the primary substance and the body its matter," or "the soul is the form of the body." Here there can be no question in regard to the form being an individual form. Here it should not be possible for the most scholastic translator to confuse form (εἶδος) with species. Certainly Callias and Socrates each has a soul. But there is an ambiguity in genetics. Aristotle had stated, again and again, that the father is the adequate cause of the son, at any rate of the form, the mother contributing the matter (the mensis). But the son, too, is an individual with a soul. Aristotle found it necessary to state the relation between generations more accurately. This he does in chapter 5, book XII, of the *Metaphysics*.

Book XII is his final corpus, his third domain of knowledge, theology. (He has three divisions of knowledge, Physics, Mathematics, and Theology.) This book he revised to the end of his

[22] *Met.*, Bk. VII, 1036a, 1 ff.; 1040a, 1 ff.

life, as we can see by the eighth chapter, on the plural movers. In chapter 5 we get his most precise statement on form. "But the distinction of actuality and potentiality applies in another way to cases where the matter of cause and of effect is not the same, in some of which cases the form is not the same but different; e.g., the cause of man is (1) the elements (viz., fire and earth as matter, and the peculiar form), and further (2) something else outside, i.e., the father, and (3) besides these the sun and its oblique course." He then goes on to generalize the result: "If the causes of substances are the causes of all things; yet different things have different causes and elements, as has been said; the causes of things that are not in the same class, e.g., of colours and sounds, of substances and quantities are different except in an analogical sense; and those of the things in the same species are different, not in the species, but in the sense that the causes of different individuals are different, your matter and form and moving cause being different from mine, while in their universal definition they are the same."[23] Here we have a precise and final statement in regard to individual forms.

One great stumbling block in the interpretation of Plato and Aristotle is that scholars have approached them with scholastic terminology. Thus γένος has been translated "genus" and εἶδος "species." Since εἶδος and ἰδέα are the words used for form in Plato and Aristotle, it would follow that form is the same as species, at least as the lowest species. This is true in the scholasticism of the thirteenth century. But there is no such established usage in the fourth century B.C. W. D. Ross complains, in a footnote to chapter 10, Book X of the *Metaphysics:* "To translate γένος and εἶδος as genus and species makes nonsense of this chapter. They have therefore been rendered 'kind' and 'form.' "[24] We must not be too hard on Aristotle or Plato. In the fourth century B.C. it was not easy to take a course in scholasticism. It was a

[23] Ross translation.

[24] I wish this great scholar, to whom we owe so much, would try the same method on chapter 9 of the same book. I think that would make sense, too. The same could be said of other parts. We need a new approach—an approach from the context of Plato and Aristotle, instead of from scholasticism. At present our translators are out of joint. I cannot say with Hamlet

O cursed spite
That ever I was born to set (it) right!

That must remain for others.

matter of sixteen hundred years of history, which the commentators ignore.

After Aristotle, the Stoics gave a new interpretation of forms in line with the *Sophist* of Plato. Forms are conceived as active or creative forms, λόγοι σπερμάτικοι, what I have called "energy patterns." Pervading all things and giving them rationality is the universal creative reason, λόγος σπερμάτικος, of which the particular forms, λόγοι σπερμάτικοι, including the human reason, are manifestations. Since the Stoics are primarily moralists, the emphasis is on the human soul and its relations to other human souls, and ultimately to the soul of the universe. The Stoics took over from Platonism the hierarchy of forms which is supposed to be repeated in each world cycle, but the individual remained basic, cosmically, psychologically and ethically. Ulpian the Stoic laid down the famous maxim that all men are free and equal, and that slavery is contrary to nature. Salvation is a relation of the individual reason to the world reason. But the Stoic interest in jurisprudence led them to emphasize universal law, and it was this emphasis that commended the Stoics to the Roman empire.

Plotinus follows the Stoics in emphasizing the activity of the forms. They are idea-forces, including individual forms. In the spirit and language of the *Timaeus,* he showed, (as I have already quoted) that the generosity of God must express itself in individual souls. He brought to explicit expression the unity of the soul in its fundamental nature and therefore in its activities. The whole-form of the soul is immortal, backward and forward, in its incarnations. (This is what Plato meant.) Augustine follows Plotinus and indeed repeats his arguments, though since he rejects the pre-existence of the soul (for "lack of evidence," but no doubt because of the Church), he has recourse to con-creation: the soul and body are created together. But the soul is endowed with the Platonic ideas of Truth, Goodness and Beauty. In God all forms exist eternally, and the pure soul can see them in God.

In medieval thought up to the thirteenth century, the ultimate nature of the individual soul was accepted in the spirit of Augustine. The Tree of Porphyry with its Platonic hierarchy of forms was translated into Latin by Boethius and furnished the framework of medieval thought. The hierarchy terminates in individuals—Socrates, Plato and others. Porphyry, in his *Introduction to the Categories,* written for his young pupil, had raised the question

whether universals or individuals are to be taken as the ultimately real—in order to whet the interest of his pupil. The young pupil turned out to be the Middle Ages. And the question was debated with great and sometimes tragic zeal. Up to the thirteenth century, the general opinion was that Aristotle was a nominalist, because he had plainly said that only individuals are substances. The trouble arose when Roscellinus carried his nominalism into theology, and said that if linguistic usage permitted we might speak of three gods. By implication, at any rate, the Church would become a collection of individuals, instead of a superhuman reality and the divine source of salvation. A council was called at Soissons; Roscellinus' doctrine was condemned and his book burned, depriving posterity of the knowledge of its contents. We gather from his enemies that he maintained that a universal is a mere word, *flatus vocis,* and that only individuals are real.

From Anselm, who was the energetic accuser, we gather that according to Roscellinus humanity would be just men and color would be just colors.[248a] The juxtaposition is interesting because it shows that the medieval realists did not distinguish between qualitative universals, such as color, and structural forms, such as humanity. This identification is contrary to both Plato and Aristotle. According to Plato sense qualities, such as color, are emergent facts due to the interaction of the motion from the environment with the internal motion of the organism. This is clearly indicated in the *Theaetetus* and developed in the *Timaeus,* for all the sense qualities. For Aristotle sense qualities, such as white, are accidents, and are not part of the nature (οὐσία) of the individual. A universal is an abstraction, but form is the very structure of the individual. The Middle Ages never did clear up the confusion of forms with universals. And the confusion has remained to this day.

We may say that the question, which was raised by Porphyry, was not settled on its logical merits. It became a political question, and the Church threw its great power, including the power of the

[248a] Qualitative universals are class-concepts. Roscellinus was right that color does not exist. Color is a word symbolizing color discriminations, though particular colors can be grouped into a class or classes on the basis of their affinities. See J. E. Boodin, *Contemporary American Philosophy,* I, 158 ff.; *Cosmic Evolution* (1925), 342 ff. It is different with a structural concept, such as humanity. The human species has objective existence, at any rate when we view it genetically. Humanity must be viewed as a time form. That, of course, was impossible for Roscellinus and the Middle Ages.

State, on the side of universals. The theologians were too pious to antagonize the Church, and, besides, in the twelfth century the pope-maker, St. Bernard, had a passion for purifying heretics by fire. So all united, including Abelard, in denouncing Roscellinus. The Church felt rightly that nominalism would undermine its authority. It was not until its authority was undermined that Ockham could assert frankly the nominalistic doctrine that only individuals are real. He was unintentionally the herald of the Protestant revolt against Catholic authority.

The nominalists were right that the individual form is real. But they did not see, as Aristotle, Abelard and Aquinas did, that the universal has a derived reality as an extract and abstract from individuals, and is important in discourse. A word must be relevant to be significant. Still less did the nominalists see that the living form of the individual is organically related to the larger living form of the species. That means going back to Plato.

The trouble with the medieval realists (including the commentators of today) is that they did not grasp the organismic conception of Plato or Aristotle. The scholastic emphasis is on universals, from being down to *infima species*. The realists did not grasp being as a living organismic form, including individual forms. The nominalists saw rightly the reality of the individual forms, but they were not able, because of the abstract tradition, to see that the individual must be seen in relation to more comprehensive concrete forms such as species. This relationship could be made clear only by the conception of evolution.

The climax was reached in the thirteenth century, when Albertus Magnus and Thomas Aquinas denied individual forms, and made the lowest species, *infima species,* the final form. This result was the outcome of the emphasis on universals, especially the universal church, as the ultimate reality, though they claimed the support of Aristotle. The supposed support was a mistranslation which has persisted to this day.[25] The Aristotelian interpretation was supposed to support the doctrine of transubstantiation, though the Franciscans, who followed the Augustinian tradition, believed in transubstantiation as much as the Dominicans who followed Aquinas. The Thomistic interpretation of the individual, viz., that matter is the principle of individuation and that all men have the same form, would logically have made immortality impossible,

[25] See J. E. Boodin, *Three Interpretations of the Universe,* 362 ff.

as Duns Scotus argued. But Duns Scotus's weak attempt to save the individual form as a constriction or condensation within the species was discarded for nominalism by Ockham. In the meantime such doctrines as incarnation and immortality had been grounded upon faith, as they always had been, and removed from the dubious domain of reason.

In the modern period, the medieval confusion of forms with universals has persisted. The concept of ontological form as structure has played little part in modern philosophy. It is only recently that there has been a resurgence of Platonism, though generally unconscious. Claude Bernard showed that the organism functions as a whole in its own economy and in relation to the environment; and the same wholism was worked out more fully by J. S. Haldane, especially in his classic work on Respiration. He showed how the energy system of the organism determines selectively the action of the atmosphere in breathing, and in turn how the organism could be viewed as part of the larger form of the environment, so that we could say that the universe breathes in us with as much relevance as that we breathe in the universe. The same could, of course, be said of other vital functions, such as thinking. Here the dialectic of research, independently of Plato, has thrown fresh light upon Plato's conception of the cosmic inter-relation of forms.[26]

The development of genetics has thrown fresh light upon the relation of generations in the stream of life, and, again, unconsciously, has made scientists take account of a phylogenetic form as well as an ontogenetic form. It is not possible to account for life merely as individual. The individual must be understood in his genetic relationship. It is easy to see that men who took the world as ready-made could look upon man as a universal—an abstraction from the similarities of individual men. But if we look upon man in evolution, we must recognize that the time-order of development is essential. There is a time-form of man, which includes a series

[26] There are many indications of form in contemporary science, for example, H. Speman's postulating an "organizing field" to explain the directed activities which result in a highly organized animal. (*Embryonic Development and Induction,* 1939.) This conception is given a cosmic background in Gustaf Stromberg's genii (another name for Platonic forms) which ingress into the evolutionary process from the world soul. (See the *Soul of the Universe,* 1940.)

of space-forms, which are transmuted into one another in an orderly way.

The brilliant development in the physical sciences has tended, again unconsciously, by its own dialectic to confirm the Platonic intuition of form and measure everywhere. The building-bricks of nature—electrons, neutrons, etc.—are measured, are constant in nature, and this fact indicates cosmic control. The discovery by Moseley of atomic number—a series of atomic forms repeated in nature everywhere—is evidence of cosmic architecture which would have delighted the soul of Plato. There is indication of a life-number—a radiating pattern of life-forms. This order even more obviously than atomic number has reference to time.

In modern thought, as in Greek thought, the emphasis has been upon space-form. Time has been mostly neglected, except as a dimension of space. The forms of Plato and Aristotle are eternal forms. Aristotle's biological interest might have led him to discover time-form, if he had not been so completely biased in favor of the eternal. He does deal with development from potentiality to actuality, but he does not think of realization in terms of time. In the development of the human individual, the form for Aristotle is the same throughout, i.e., is the form of the mature man. There is no evolution of species in Aristotle. Plato has an order of creation in nature, but it is stated in a mythical way. Plotinus interpreted Plato's order of creation as an eternal chain of forms, within a living whole, from the most general forms to the individual soul.

The great need is the development of the idea of time-form. Anaximander and Heraclitus did conceive the cosmos as an order of time, but their insight was killed by Parmenides, and has only recently been revived. I have tried to develop the concept of time-form ontogenetically, phylogenetically and cosmically.[27] Plato is right that there is a structure of generations as well as individual structure. But each is a time form and not merely a space form. And Plato was right that there is a whole-form, ὅλον εἶδος, of the

[27] See the author's *A Realistic Universe* (1931), chapters III and XVIII; *Cosmic Evolution* (1925), chapters III and VIII; *Three Interpretations of the Universe* (1934), chapters IV, V, and VI, esp. V; *God* (1934), chapters II to VI; *The Social Mind* (1939), chapter 1; *Man In His World* (1939); including "Cosmic Implications of Normative Structure," *Proceedings Ninth Internat. Cong. of Philosophy* (1937); "A Revolution in Metaphysics and Science," *Philosophy of Science* (1939).

cosmos, but this whole-form has reference to time as well as to space, to the future as well as to the past, furnishing a guiding field of the multitudinous histories, so far as their inertia and wilfulness permit. This cosmic whole must be, as Plato felt, in some sense a living whole in order to be self-maintaining and self-regulative.[28] The only alternative would be the conception of fiat creation. But such a conception is not intelligible and, therefore, cannot be entertained in science or philosophy.

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[28] See the author's *God* (1934), Chapter IV.

THE ENGLISH CASE AGAINST VOLTAIRE: 1789–1800

By Bernard N. Schilling

Until well into the nineteenth century in England, denunciation of Voltaire was a safe indication of a loyal and orthodox point of view. The great infidel lived in the average English mind almost entirely by his reputed vices; indiscriminate abuse of him was natural, largely on the score of his infidelity, his irreverence toward what was commonly held to be sacred. The most superficial glance at Voltaire's English reputation will show the prevalence of this attitude, but it is not widely known that during and immediately after the French Revolution, there grew up what may be called "the English case against Voltaire," an organized accusation which held that Voltaire had not only for years deliberately plotted to undermine the Christian religion, but also that, because he had weakened popular religious belief in France, he was a direct cause of the French Revolution. This article will attempt to show that the condemnation of Voltaire as a prime mover of the French Revolution proceeds naturally from the prevailing English opinion that popular religious belief, especially Christianity, is absolutely essential to the maintenance of government and that anyone who weakens religious reverence opens the way to disorder and rebellion. It will be shown that the French revolutionists themselves helped to fix the English belief in Voltaire's guilt by proclaiming the Revolution's debt to his inspiration. Finally, it will be seen that the entire English view of Voltaire was crystallized and fixed by the publication of Barruel's *Memoirs Illustrating the History of Jacobinism* (1797) which accused Voltaire of having caused the French Revolution by first leading a conspiracy against Christianity from which anti-monarchical feeling grew.

The belief that religion strongly supports civil government is found in the work of so many lay and clerical writers that examples admit of almost indefinite multiplication. Some writers point out that this idea was common to Greek and Latin authors, citing Numa, Solon, Lycurgus,[1] Plutarch,[2] Plato,[3] and Cicero, whose authority

[1] Lewis Hughes, *Historical View of the Rise, Progress, and Tendency of the Principles of Jacobinism* (London: 1799), p. 44.

[2] Jonathan Boucher, *View of the Causes and Consequences of the American Revolution* (London: 1798), p. 311 n.

supports Burke in his assertion that "religion is the basis of civil society" and must be maintained if any government is to exist in safety.[4] Yet there would be no need of calling upon additional authority to convince the English that religion is the foundation of their entire constitution: Burke insists that "church and state are ideas inseparable in their minds, and scarcely is the one ever mentioned without mentioning the other."[5] The essentials for sound government were hardly discussed among Burke's contemporaries without the assertion that religion was indispensable. It was held to be difficult, even "if it be possible, to name a government that ever subsisted long without some connexion or alliance with religion."[6] The example of England herself makes an appeal to wider experience unnecessary, for by her unshakeable attachment to established faith she has become a rare proof of what religious reverence can do for political order.[7] If it be argued that these are the opinions of conservative Englishmen who are pleased with the existing order, what shall be said when "even men who laboured to erase out of the mind all respect for religion, have acknowledged the importance and expediency of it?" Such men as Bayle, Bolingbroke, Rousseau, and Gibbon all have admitted that religious belief is a strong aid in making government effectual,[8] in spite of their opposition to it on intellectual grounds. Indeed Voltaire himself was seen to have admitted that it was necessary to have religion wherever society was established, a discovery which made the Rev. Andrew Fuller doubt the evidence of his senses.[9] There are even some Englishmen who, according to Burke, would prefer any form of religion, however outlandish or absurd, to downright impiety.[10] Even in its most degraded state religion gives stability to any society,[11] and it is better to have people profess a faith of

[3] *An Examination of the Principles of the French Revolution* (London: 1796), pp. 56–57.

[4] Burke, *Reflections on the Revolution. . . .* (London: 1790), p. 72 and n.

[5] *Ibid.*, p. 80.

[6] Jonathan Boucher, *op. cit.*, p. 101.

[7] Lewis Hughes, *op. cit.*, pp. 78–79.

[8] Edward Ryan, *History of the Effects of Religion. . . .* (London: 1806), pp. 460–61.

[9] Andrew Fuller, *The Gospel its own Witness* (2nd edition, Clipstone: 1800), pp. 75–76.

[10] Burke, *op. cit.*, p. 72.

[11] Peter Roberts, *Christianity Vindicated* (London: 1800), p. 78.

some kind, even though it contains "useless and sometimes harmful superstitions," than to let them go on with no belief at all.[12]

Now if it be true that any religious faith whatever, even a foolishly superstitious one, will support the well-being of a commonwealth and the safety of its government, how great must be the influence of such a faith as Christianity itself? Experience has shown, in the opinion of Bishop Porteus, "that of all the religions that have ever yet appeared in the world, none were ever so well adapted to promote the welfare of society, and the great ends of civil government, as the Christian revelation. . . ."[13] There never was any religion so well fitted for the support of civilized government as Christianity,[14] which is and "must ever be the firmest bond for upholding the authority of the magistrate, and preserving the peace of society."[15] Christianity strengthens the union of religion and civil government beyond all other religious systems because it has a greater tendency than any other faith to preserve men from vice and to encourage them in virtue.[16] As the *Encyclopedia Brittanica* of 1797 points out, Christianity supports civil order because it is so favorable "to the virtue and the happiness of mankind."[17] It tends to check the weak nature of man, with the result that "the best Christian is the best member of civil society."[18] One may even recognize a Christian by his superior equipment for excellent citizenship, because the Christian faith tends to produce or to encourage those qualities of obedience and submission to authority which are the marks of a good citizen. Rousseau himself had believed that "Christianity inculcates servitude and dependence . . . true Christians are formed for slaves: they know it, and never trouble themselves about conspiracies and insurrections. . . ."[19] Chris-

[12] William Craig, *Twenty Discourses on Various Subjects* (London: 1775), I, pp. 49–50.

[13] Beilby Porteus, "Charge to the Clergy. . . . 1794," *Works* (1823), VI, pp. 278–79.

[14] John Leland, *A View of the Principal Deistical Writers. . . .* (London: 1807), II, p. 438.

[15] Thomas Somerville, *The Effects of the French Revolution* (Edinburgh: 1793), p. 89.

[16] J. Rotheram, *Essay on Establishments in Religion* (Newcastle upon Tyne: 1767), pp. 95–96.

[17] *Encyclopedia Brittanica* XVI (1797), pp. 76–77.

[18] Vicesimus Knox, *Christian Philosophy* (Dublin: 1796), p. 203.

tianity inculcates a willingness to serve because it binds men in conscience to obey civil governors, lest in offending them they offend God Himself. No matter how evil a given set of rulers may be, "Submission to God's appointment is required of us. . . ."[20] There is no possible question for the Christian to ask in the face of authority save one: ". . . on every supposition that can possibly be made Christians are bound to be subject. We have no question to ask but this, *who are the powers?*"[21] In addition to these precepts, Christians are aided in their meekness by the example of Christ Himself and His early followers. The admonition to render to Caesar and to God that which was due to each was first followed by Christ personally.[22] He forbore to escape His death through a revolution by his followers, not wishing to give a precedent to which future rebels might appeal. His followers can do no better than likewise and obey their civil rulers.[23] St. Paul makes this clear in writing to Titus that the early Christians should be put in mind "to be subject to Principalities and Powers; to obey Magistrates." The practice of the apostles and their followers forbade all rebellion, and no matter what the nature of the Roman government, the early Christians patiently submitted "without resistance or reviling."[24] Christians therefore tend to be ideal citizens because they are commanded to be obedient and have before them the example of Christ and the Apostles. They are obliged to consider it binding in conscience upon them to submit to any government under which they chance to be living, no matter how unjust or tyrannical such government may be. In addition, the Christian religion has a final check on human impulse through its doctrine of rewards and punishments in an after life. "Mankind can never be kept in subjection to government, but by the hopes and fears of another world; nay, the express precepts, promises, and threaten-

[19] J. J. Rousseau, "A Treatise on the Social Compact," in *Political Classics* (London: 1798), III, p. 179.

[20] Thomas Scott, "Impartial Statement of the Scripture Doctrine, in respect of Civil Government," *Theological Works.* (First American Edition, Philadelphia: 1810), III, p. 489.

[21] *Edinburgh Quarterly Magazine* I (1798), pp. 130–31.

[22] "Village Politics . . . ," *Liberty and Property Preserved Against Republicans and Levellers* (London: 1792), p. 5.

[23] Jonathan Boucher, *op. cit.*, p. 542–43.

[24] Thomas Prentice, *The Scripture Precept of Subjection to Civil Government* (London: 1776), pp. 5–26.

ings of the gospel are requisite for this purpose. The unwritten law of nature is too pliable, too subtle, and too feeble. . . .''[25] Paley insists that ''a person who acts under the impression of these hopes and fears . . . is more likely to advance both the public happiness and his own, than one who is destitute of all expectation of a future account.''[26] Not only will future reward and punishment restrain men through fear, but it will console them with the hope that the inequalities of this life will be rectified in a future world. They will not rebel against injustice and inequality, believing that there will be a reckoning before God and that man need not take the administration of such justice upon himself. Christians forgo the usual human impulse to envy or regret in the face of differences of rank or fortune or the burdens of oppression, and they learn ''submission without meanness.''[27]

It therefore follows that if religion, and Christianity in particular, tends to encourage a submissive and obedient attitude toward civil government, the decay of religious belief in a people will remove one of the strongest possible supports to the existing régime. Should this government be unpleasant to the people, they will rise up against it when the restraint imposed by religious belief is weakened. Rulers of nations should therefore see to it that their people do not fall into infidelity, because a popular indifference to religion is one of the surest paths to revolution. The spirit of opposition to government is the natural offspring of irreligion,[28] just as the spirit of submission is the fruit of devout faith. Experience has shown that the decline of religion is followed by the dissolution of states: ''sap Religion and you sap the state.''[29] Francis Bacon had long ago warned even against ''innovation in matters of Religion,''[30] as a first possible cause of sedition. The lenient attitude of toleration was also a possible danger, suggesting ''a level-

[25] *Conclusion of the late Dr. Hartley's Observations. . . .* (Edited by Joseph Priestley, London: 1794), p. 10.

[26] William Paley, "Moral and Political Philosophy," *Works* (London: 1837), II, pp. 41–42.

[27] J. Necker, *Of the Imporance of Religious Opinions* (London: 1788), pp. 67–68.

[28] George Gleig, *Sermons Preached Occasionally. . . .* (Edinburgh: 1803), p. 112.

[29] Thomas Clarke, *The Benefits of Christianity Contrasted with the Pernicious Influence of Modern Philosophy. . . .* (London: 1796), p. 5.

[30] *Of Seditions and Troubles.*

ling republican spirit in the Church" which might lead to republicanism in the state. There is danger in the mere notion "that religion and government admit of improvement; much of their influence and efficacy depending on the persuasion that they are already perfect."[31] The attitude of scepticism, or the use of reason as opposed to revelation, is likewise dangerous and leads to discontent with established authority.[32] If even these remote beginnings of a questioning point of view are dangerous, such extremities as deism are certain to mean rebellion against the reigning powers. In England certainly "the idea of a *Deist* and a good *Democrat* seemed to have been universally compounded,"[33] and according to the *Anti-Jacobin Review* "the general habit of scepticism" produced by deistical writings "leads to the overthrow of all established governments."[34] Thus when the Christian religion, the very cement of governmental structure, is renounced, "the peace, the order, the comfort, the security of civil government are for ever gone" and the way is prepared for every disaster feared by man.[35] The door is open to vice, disorder, and misery; confusion and violence will result and every evil work must ensue.[36]

Finally, if those who wish to maintain things as they are see that they must have the help of religion in doing so, the subversive must also realize the need of removing Christianity before a revolution can succeed. Common sense will dictate the abolition of Christianity to every political association bent on a violent uprising.[37] Such a project will best be advanced by obliterating belief in a future life and a God of retributive justice;[38] in short, by destroying the influence of Christianity. This is precisely what was done by the French revolutionists themselves, according to prevailing English opinion shortly to be considered. The infamous Jacobin

[31] Jonathan Boucher, *op. cit.*, pp. 104, 202–03.

[32] Henry Kett, *History the Interpreter of Prophecy* (Fifth edition, London: 1805), II, p. 161.

[33] William Reid, *The Rise and Dissolution of Infidel Societies. . . .* (London: 1800), p. 8.

[34] *Anti-Jacobin Review* I (1798), p. 362n.

[35] Beilby Porteus, *op. cit.*, pp. 281–82.

[36] John Erskine, *The Fatal Consequences and the General Sources of Anarchy* (Edinburgh: 1793), p. 36.

[37] Thomas Somerville, *op. cit.*, p. 45.

[38] Richard Watson, *An Address to the People of Great Britain* (London: 1798), pp. 29–30.

Club considered it a wise move to drive the clergy into exile, for the fear of God which they taught meant honor to all who were in authority and this fear had to be removed before a revolution was possible.[39]

The transition from these general considerations to the case against Voltaire now becomes entirely natural. If it is believed in England that the Christian religion is indispensable to the support of government and that anyone who tries to undermine that religion is by that very fact preparing the way for popular rebellion, it must follow that since Voltaire had been active in undermining French belief in Christianity, he must have been at least a partial cause of the French Revolution. And when the revolutionists themselves admit their debt to Voltaire his guilt became undeniable. When the Abbé Barruel drew all these various threads together in his *Memoirs Illustrating the History of Jacobinism,* the conservative English were clearly ready to believe anything he chose to tell them about Voltaire's authorship of the French Revolution.

Even before Barruel's book was published, it was regarded as almost axiomatic by most English conservatives that infidelity had caused the French Revolution. The opinion of the Rev. George Gleig, "that the present revolution in France . . . is the offspring of infidelity, needs no proof." It is a fact "known to anyone in the smallest degree acquainted with the history of that miserable country."[40] The very "Basis and essential *Principle*" of the Revolution has been the total rejection of all religious reverence.[41] Infidelity and contempt for religion has become "the main cause of the judgment which has fallen" upon France.[42] The nation has been undone by a vicious principle within itself; "it was the abundance of her iniquity," a kind of "inward ebullition, which like a subterraneous fire burst out and buried her Church and her Monarchy in one universal ruin."[43] If any proof of the essentially irreligious character of the Revolution were needed beyond the

[39] "Village Politics . . . ," *Liberty and Property Preserved Against Republicans and Levellers* (London: 1792), p. 2.

[40] George Gleig, "Fast Day Sermon, 1794," in *Sermons Preached Occasionally.* . . , p. 118.

[41] Thomas Rennell, *Principles of French Republicanism.* . . . (Winton: 1793), p. 15.

[42] Walter King, *Two Sermons.* . . . (London: 1793), pp. 24–25.

[43] *Ibid.,* p. 20.

mere fact of its existence, it would be seen in the denial that there was a life after death. Over the gates of public cemeteries in France was posted the simple assertion, "Death is an Eternal Sleep." Here was a literal statement that the new order in France would recognize no world but this. What further proof was needed than this bold emancipation of one world from another that the French Revolution was the offspring of irreligion?[44]

It was therefore hardly to be argued whether or not the Revolution had its basis in irreligion. But there remained the possibility that it all had proceeded from a deliberate plan; that the enmity to religion was the result of a far-reaching plot by a group of men who had planned the overthrow of Christianity at long range and that from this plot against Christianity the Revolution had arisen. This view gained currency in England with the considerable aid of Burke's *Reflections* and by the year 1797 was a familiar explanation of the genesis of the Revolution. The accusation was made that a sect of "philosophers" labored "to undermine the two great bulwarks of Society, Religion and Morals. . . ."[45] According to Burke, these "philosophical fanatics" had long entertained "the utter abolition, under any of its forms, of the Christian religion. . . ."[46] Bishop Porteus accuses the "philosophers" of having waged "open war with the gospel for near half a century"; at length they have established "a regular system and School of infidelity" whose grand object is "the extirpation of Christianity from the earth. . . ."[47] These enemies of Christianity prosecuted their design with fanatical zeal.[48] They obtained command over public opinion by a flood of impious and subversive literature which they dispersed "with incredible assiduity and expence."[49] Booksellers' shops were so

[44] John Gifford, *Residence in France. . . .* 1792–95 (Third ed. London: 1797), II, p. 32 and n. This denial of a future life seems to have been especially shocking to the English. Cf. John Whitaker, *The Real Origin of Government* (London: 1795), p. 47; *First Fruits of the French Revolution,* title page missing, Yale College Pamphlets CCLXII, No. 4, p. 91; H. R. Yorke, *Letter to the Reformers* (Dorchester: 1798), pp. 50 and n.–52n.

[45] John Bowles, "Thoughts on the Origin and Formation of Political Institutions," *The Retrospect* (London: 1798), p. 301.

[46] Burke, *op. cit.,* p. 120.

[47] Beilby Porteus, *op. cit.,* pp. 264–65.

[48] Burke, *op. cit.,* pp. 89–90.

[49] *Ibid.,* pp. 23–24.

crowded with buyers of this stuff that one could hardly obtain entrance.[50]

The spirit of this blasphemous enterprise is to be seen in the private correspondence of the principal conspirators, especially that of Frederick the Great and Voltaire. They personify Christianity "in a variety of places, under the denomination of *the infamous,*"[51] and there can be no doubt that they were engaged in "a pre-meditated plot by all possible means to destroy the Christian religion."[52]

The evidence converges finally upon Voltaire himself. If the French Revolution had its basis in irreligion and if it was preceded by a deliberate plot to destroy Christianity, there must have been a central figure, some first mover or primary cause who was responsible for the entire tragedy to some extent. Voltaire divides this doubtful honor with other "philosophers," particularly with Rousseau, who is often mentioned with him; but the chief responsibility was usually laid to his charge.

Voltaire was cordially hated in England even before the Revolution. The violent reaction of George III in 1785 as reported by Fanny Burney is typical of that felt by many of his subjects. After discussing Voltaire's works, the king ended by condemning their tendency: " 'I,' cried he, 'think him a monster, I own it fairly.' "[53] It was easy to believe great wickedness of Voltaire, and Englishmen were therefore easy to convince that he was responsible for the Revolution. This thesis found expression in England even before Barruel's *Memoirs.* Voltaire was looked upon as the precursor not only of such men as Mirabeau and Robespierre but of Tom Paine as well.[54] "The hypocritical and bloody Robespierre in his harangues" has made use of Voltaire's very language.[55] When the French revolutionists distinguish between their view of God and the orthodox belief, they mean clearly "the *Supreme Being* of M. Voltaire, of M. Robespierre, and Mr. Paine."[56] Voltaire was a

[50] John Gifford, *Reign of Louis XVI.* . . . (London: 1794), pp. 298–301.

[51] *Monthly Review* LXXX (1789), pp. 628–30.

[52] *Examination of the Principles of the French Revolution* (London: 1796), p. 59.

[53] *Diary and Letters of Madame D'Arblay* (1778–1840) (London: 1904), II, p. 342.

[54] *St. James's Chronicle* (Nov. 25–27, 1790).

[55] *British Critic* VIII (1796), pp. 506–07.

[56] Beilby Porteus, *op. cit.*, p. 272n.

man who "regarded every species of religion with innate rancour and abhorence," and who could seldom speak of the common virtues without a sneer. By thus prostituting his genius he held a powerful "ascendancy over all his philosophical contemporaries. . . ."[57] Even if it could be said that he had promoted reason and tolerance, "he too often exerted himself in extending the principles of irreligion and anarchy."[58] It was easy to see therefore that "if to any *one* man the present commotions of France be particularly owing, it is to Voltaire."[59] If calamity be traced to its proper source "we must be forced to confess that the flimsy writings of that wretched caviller Voltaire had *undone France.*" By his impious scoffing at religion he made way for the revolution, because "there are no libels so dangerous to a state as those against God. . . ."[60]

Voltaire's assumed enmity to religion would doubtless have been enough to assure orthodox Englishmen that he had caused the French uprising, but the matter was placed beyond the remotest question when the revolutionists themselves proclaimed their debt to him in perhaps the most extravagant popular tribute ever paid to a man of letters, the "apotheosis of Voltaire." The National Assembly decided on the anniversary of Voltaire's death, May 30, 1791, that some mark of public distinction should be given to Voltaire's remains, now to be moved from the Abbey de Sellières.[61] Since Voltaire's body had been refused decent burial at the time of his death, a grateful nation was now to make good this wrong. As M. Christin remarked, "l'influence des écrits de Voltaire, de cet homme de génie, sur la Révolution française est incontestable,"[62] and it is therefore appropriate that Voltaire's remains be placed in the Panthéon after due honor has been paid to them. The body was accordingly exhumed and taken first to the parish church at Romilly, where it remained until the day set for its removal to Paris. The journey to the capital was a continuous triumphal march, the elaborate procession being everywhere greeted with im-

[57] John Moir, *Preventive Policy* (1796), pp. 235–37.

[58] *New and General Biographical Dictionary* (London: 1784), XII, pp. 746–47.

[59] *Critical Review* LXIX (1790), p. 75.

[60] *An Impartial History of the French Revolution* (London: 1794), II, p. 340n.

[61] Jean F. Robinet, *Le Mouvement Religieux à Paris Pendant la Révolution* (Paris: 1896), I, p. 531.

[62] *Archives Parlementaires* XXV (1791), p. 661.

mense enthusiasm. By a strange irony, the great infidel's remains were looked upon as something akin to the relics of a saint, and many persons were said to have "touched the sarcophagus with their kerchiefs and then devoutly kissed the fabric, now something sacred. . . ."[63] On arriving at Paris, the vast procession made its way to the ruined Bastille where the sarcophagus was to remain over the night of Sunday, July 10. The fortress had fallen only with the aid of Voltaire's preparation, and it was appropriate that he should be honored upon its ruins, especially since in life he himself had been twice a prisoner there. This was not lost on the revolutionists who wrote upon one of the stones: " 'Reçois en ce lieu où t'enchaîna le despotisme, Voltaire, les honneurs que te rend la patrie.' "[64] An even more unmistakable admission was given in the "Hymne à l'Honneur du Grand Voltaire qui sera chanté sur les débris de la Bastille," a statement in so many words of the revolution's creator:

> Voltaire est mort, Voltaire vit:
> Pourquoi pleurons nous aujourd'hui
> Puisqu'il nous reste son esprit.
> Il fit la Révolution,
> Il fit notre constitution;
> Rendons donc honneur à son nom.[65]

On Monday an enormous procession, with representatives from almost all important walks of life, accompanied the elaborate funeral car from the Bastille to the Panthéon. The parade was of such size and complication that forty-eight masters of ceremony were chosen to help the national guard to direct the march.[66] Citizens who had assisted in the capture of the Bastille, bearing aloft an image of the hated prison, were followed by others carrying pikes; miscellaneous groups of soldiers, deputies, officials, and judges marched with representatives of the theatre, men of letters, and musicians, who accompanied the magnificently decorated hearse drawn by twelve white horses. At various points in the

[63] William Sloane, *The French Revolution and Religious Reform* (N. Y.: 1901), p. 174.

[64] *Le Moniteur Universal* IV (13 Juillet, 1791), p. 802.

[65] This hymn was found in a British Museum collection, *Bibliothèque Historique de la Révolution:* Fêtes Civiques 10.11.12.

[66] "Translation de Voltaire à Paris . . . ," *Department of the Seine Administration.* (Paris: 1791), pp. 24–25.

procession were to be seen the inevitable inscriptions hailing Voltaire as the ultimate liberator of France: "Il vengea Calas, Labarre, Sirven et Montbailly. Poëte, philosophe, historien; il a fait prendre un grand essor à l'esprit humain, et nous a preparés à devenir libres."[67] The procession followed the boulevards, paused at the Opera, and arrived finally before the "pavillon de Flore." The palace windows were open and crowded with royal servants; only one window was closed, behind which Louis XVI and Marie Antoinette stood in terror, "glacés sans doute d'épouvante aux fiers accens de la philosophie, du patriotisme et de la liberté," and perhaps hearing in the beat of Voltaire's march of triumph, the accent of their coming end.[68] In spite of its great size and the thousands of spectators who crowded the streets, roofs, and windows along the route, the procession moved with stateliness and perfect order until, after a ceremony at the *Comédie Française*, the rain began to fall and the remains of Voltaire were hurried to Sainte-Geneviève. The apotheosis had accomplished its purpose. It was a triumph of what the Revolution stood for: "le triomphe de la raison, la défaite du fanatisme, Le Saint amour de la patrie, et la résolution de tout sacrifier à la liberté."[69] The sarcophagus lay exposed for three days to permit the citizens to see the very body which only thirteen years before had sought vainly for a place in the earth of Paris.[70]

Obviously, a celebration of such magnitude and implications did not escape the attention of English observers. Considering for the moment only the notice taken by English newspapers of the event, it seems clear that the reading public was aware of the revolution's tribute to Voltaire. Of twenty-seven English newspapers for July,

[67] *Chronique de Paris* III (July 12, 1791), p. 781.

[68] *Loc. cit.*

[69] *Ibid.*, p. 782.

[70] *Le Courier Français* "Supplement au No. 195," XII (1791), p. 61. Materials for the study of this extraordinary episode are very abundant. Besides the sources already referred to, the following will be found most useful: *Le Courier des 83 Départements. . . .* XXVI (11–13–17 Juillet, 1791), which has the longest and most circumstantial account; Charles Villette, *Lettres Choisies . . . sur les principaux Évènemens de la Révolution* (Paris: 1792), contains an interesting version by an active participant in the apotheosis; the *Révolutions de Paris* IX (16 Juillet, 1791), also contains a good report. In *Collection Complète des tableaux Historiques de la Révolution Française* (Paris: 1804), facing p. 217 is a large picture called *Triomphe de Voltaire* accompanying a brief description of the ceremony.

1791, which were examined, twenty-three carried some notice of Voltaire's triumph. Of these, nine gave only brief remarks, with few details.[71] Of the remaining fourteen papers, nine carried descriptions which made some selection among the details;[72] the other five accounts were highly detailed and circumstantial. *The Whitehall Evening Post* (July 16–19) devotes a column and a half to the apotheosis, repeating the French inscriptions as to Voltaire's authorship of the revolution and emphasizing the rôle of the Bastille in the celebration; *The Oracle* (July 19) gives a long and detailed description under the single-word heading, VOLTAIRE. *Lloyd's Evening Post* . . . (July 18–20) has an excellent account covering over half a page in which the feeling of indebtedness to Voltaire by the revolution is emphasized. *The Morning Herald* (July 19) has a long analysis of the procession and adopts a tone of condescension and skepticism toward an affair which had provoked such enthusiasm among the French. The best English newspaper account discovered, however, was that of the *Evening Mail* (July 25–27), which gives under the heading, APOTHEOSIS OF VOLTAIRE, an elaborate and circumstantial description of the ceremony, adding its own comment upon the meaning of such a tribute.

That the apotheosis was well-known in England would follow from the indignant reaction to its implications even without other evidence that the news was widely current. The tribute to Voltaire could only strengthen an already existing suspicion among the English: that the great infidel had been a precursor of the Revolution, which by its deification of him was admitting what its real basis and tendency was. The revolutionists had rid themselves of the fear of God so that they could uproot honor for the king. The infidel philosophers aided them in this, and having shown their enmity to Christ's gospel, the French leaders now "honour and deify the poor corruptible remains of him, whose life was as im-

[71] *The World* (London) July 18; *The London Recorder, or Sunday Gazette,* July 17; *The Morning Post and Daily Advertiser,* July 12; *The Edinburgh Herald,* July 22; *The Reading Mercury and Oxford Gazette,* July 25; *The Lincoln, Portland, and Stamford Mercury,* July 22; *The Caledonian Mercury,* July 18; *The Kentish Chronicle,* July 19; *The Ipswich Journal,* July 23.

[72] *The Diary or Woodfall's Register,* July 19; *St. James's Chronicle,* July 14–16; *The London Chronicle,* July 19; *The General Evening Post* (London), July 16–19; *The Dublin Chronicle,* July 21 and 23; *The Edinburgh Advertiser,* July 19–22; *The Newcastle Chronicle,* July 23; *The Kentish Gazette,* July 15 and 22; and *The Star,* July 18.

pious and immoral, as his philosophy was false.'"[73] Only an atheistic zeal could pay honor to such a perverter of mankind, and according to Burke, the apotheosis was the equivalent of "atheism by Establishment."[74] Such a distinction paid to infidelity "was a full declaration of the principles as well as the intentions of the majority of the Assembly."[75] The tendency of the Revolution must be to encourage an open disdain of religion; if not, why did the leaders cause Voltaire to be exhumed and his mouldering skeleton to be brought "in a profane triumph to their metropolis," there to inter it "beneath a dome, sacred to Christian adoration?"[76] A nation which denies God and honors Voltaire must utterly have sold itself to the forces of evil. For he was a man "whose writings made a mockery of every religious faith," a man "who had no one virtue, and whose genius was the powerful instrument of vice"; in this apotheosis he now receives the "veneration of a people whom he had corrupted. . . ." Such a ceremonial for such a person can only arouse horror, astonishment, and foreboding toward a nation guilty of "such a blasphemous insult on the Christian faith."[77]

Thus the ill-fame of Voltaire aggravated the disfavor into which the Revolution had fallen, and conversely, the hostility in England to the Revolution rendered the reputation of Voltaire even more unsavory.

It would now seem that when Barruel's *Memoirs* appeared to denounce Voltaire as the author of the French Revolution, its English readers were quite ready to accept his guilt as finally proved. For this remarkable performance summarizes all that had previously been either implied or declared in England touching Voltaire's influence on the French Revolution. The protection offered to established government by religious belief; the anti-Christian movement prior to the revolution; the accusation against certain "philosophic" men of letters as precursors of the revolt; and the concentration of the entire edifice upon Voltaire himself as a foundation: all these threads are now drawn together in a

[73] William Agutter, *Christian Politics* (London: 1792), p. 11 and n.

[74] Burke, *Two Letters . . . on the Proposals for Peace with the Regicide Directory* (London: 1796), pp. 98–99.

[75] William Cobbett, *The Bloody Buoy* (London: n.d.), p. 163.

[76] David Scurlock, *Thoughts on the Influence of Religion. . . .* (London: 1792), pp. 31–32.

[77] *Evening Mail* (July 4–6, 1791), p. 2.

work whose main purpose was to show that Voltaire above all others was to blame for the Revolution. The central argument of the *Memoirs* may be simply stated: the French Revolution was the result of a triangular conspiracy, anti-Christian, anti-monarchical, and anti-social, tending in the end to the universal overthrow of the existing social order. The origin of the entire scheme lay in the plot against Christianity, out of which grew the anti-monarchical conspiracy, which in turn bore fruit in the schemes of German Illuminism for the complete subversion of European society. Although Voltaire, monarchist as he was, may not have had in mind any revolution beyond the overthrow of Christianity, he is none the less to blame for all the ruin which followed on that decline of religious faith which he had caused. Barruel declares that about 1750, Voltaire, Diderot, Frederick the Great, and D'Alembert, entered into a regular plot to destroy Christianity. Their policy, as constantly repeated by Voltaire, was to "strike, but conceal the hand" and their watchword, composed by Voltaire, was "écrasez l'infâme," meaning *"Crush Christ, crush the religion of Christ, crush every religion that adores Christ."*[78] In order to carry out their impious design, the conspirators had recourse to a series of concerted actions. The first of these was the publication of that "arsenal of impiety," the *Encyclopedia,* which, pretending to be a compendium of general knowledge, would spread the subtle poisons of unbelief without suspicion to the reader. A second part of the scheme was the suppression of the Jesuits, so that these champions of Christianity could no longer support the tottering structure of the Church; this was to be followed by the destruction of all other

[78] Barruel, *Memoirs,* I, p. 28. Augustin de Barruel (1741–1820) was a French Jesuit who led clerical opposition against the Revolution in France. He published militant attacks on "philosophy" in *Lettres Helviennes* (1784) and the *Journal Ecclésiastique* which he edited from 1788 to 1792; he fled for his life in July, 1792, and finally reached England where his activities are obscure. Besides the *Memoirs* his chief work in England was a *History of the French Clergy* during the revolution (1794). That Barruel was active in the affairs of the émigré clergy in England is shown by unpublished letters now in the possession of the Hon. Charles Clifford of Chudleigh, who placed his family records at my disposal. Very little information as to Barruel's English connections outside the Clifford family has been discovered. He left England in September, 1802, and after further publication on religious matters died in 1820. The best biographical notices of Barruel are in *L'Ami de la Religion* XXV (1820), pp. 401 ff., and M. Dussault, "Notice Sur . . . Barruel" in Barruel's *Les Helviennes, ou Lettres Provinciales Philosophiques.* (Paris: 1830.)

religious orders, who were to be deprived of all their material possessions and discredited by ridicule and calumny on the part of the conspirators until their support to Christianity would be negligible. A further element of the plot was the domination of the French Academy by "philosophers"; it was planned so to control the admission to the Academy, that only a proved infidel could enter. The Academy might then infect other men of letters who would aid in the wholesale perversion of public opinion by a torrent of impious literature. The production of these irreligious writings was the final element in the anti-Christian plot, and for the last twenty years of his life, Voltaire directed a flood of such works which made available the poisons of infidelity to all who were able to read. His entire object in these years was to vilify and calumniate the Christian religion. In his own person he united all the divergent threads of his conspiracy, and his activity against Christ had no parallel in Hell itself. His life was spent in blasphemy and it is no wonder that he died in horrible agony, raving dreadfully and expiring in a paroxysm of curses and remorseful exclamations. Such was the plot against Christianity from which the French Revolution grew.

As we have seen, the English were ready to believe this accusation against Voltaire. Barruel simply resolved a chord of opinion which had been waiting for years to be brought to a climax. When his work appeared in translation in 1797, it was given a most enthusiastic reception. An entire edition was sold "before the fourth volume reached the press";[79] in all, three editions appeared in England, the original French in five volumes, and two editions of the translation by Robert Clifford in four volumes.[80] As will shortly be seen, some of Barruel's champions wrote what were little more than abridgements of the *Memoirs*, enlarging considerably the author's audience.[81] It is true that a number of commentators

[79] Robert Clifford, "Advertisement," *Application of Barruel's Memoirs . . . to the Secret Societies.* . . . (London: 1798), p. ii. Robert E. Clifford (1767–1817), Barruel's translator, was the third son of the fourth Baron Clifford of Chudleigh, who was prominent in English Catholic affairs. Robert became a fellow of the Society of Antiquaries and of the Royal Society in 1797, but at this period was entirely concerned with his work for Barruel. Little information concerning him is available outside his family papers which have to do only with his translation of the *Memoirs* and personal affairs.

[80] *The Monthly Epitome and Catalogue of New Publications* III (1799), p. 32.

[81] For Barruel's entire bibliographical history both in England and abroad see Carlos Sommervogel, S. J., *Bibliothèque de la Compagnie de Jésus* (Paris: 1890),

objected to the fantastic series of "plots" by which Barruel explained the revolution, and pointed out other unconvincing aspects of the *Memoirs*.[82] Yet, almost invariably even the severest critics of the *Memoirs* will allow that the story of an anti-Christian plot led by Voltaire has a real foundation. Whatever else is objected to, no one contests Barruel's accusations against Voltaire. That the great infidel was the originator of a plot against Christianity from which the French Revolution arose, is the almost invariable opinion of everyone who mentions him at all in the last years of the eighteenth century.

Save for a few skeptics, therefore, Barruel had little difficulty in convincing the English that he had said the final word on the origins of the French Revolution. He was looked upon as a public benefactor because of his exposure of the entire conspiracy.[83] Every friend of religion, "of government and social order" must feel indebted to him for his unveiling of "a system of iniquity . . . the most dangerous, the world ever saw."[84] One observer points out the similarity between Burke's *Reflections* and the *Memoirs*, which were a remarkable proof of the justice of Burke's statement as to a deliberate conspiracy in France.[85] Indeed, Burke himself wrote personally to Barruel, commenting on the *Memoirs*, only one volume of which he lived to see. In his opinion the whole of this "wonderful narrative is supported by documents and proofs of the most juridical regularity and exactness . . . the tendency of the

I, pp. 938–41; August Wolfsteig, *Bibliographie der Freimauerischen Literatur* (Leipzig: 1923), I, p. 325; and A. De Backer, *Bibliothèque des Écrivains de la Compagnie de Jésus. . . .* (Liege, 1853), I, p. 44. For the reception of Barruel in America see Vernon Stauffer, *New England and the Bavarian Illuminati* (New York, 1918), pp. 214–28, 309–12.

[82] See for example *Critical Review* XVI (1797), pp. 537–38; *Monthly Review* XXIII (1797), p. 529; *British Mercury* II (1799), 353–56; *Analytical Review* XXVI (1797), p. 234; John Clowes, *Affectionate Address to the clergy . . .* no place, date, or publisher, pp. 7n.–8 and n., and especially "Preface by the Translator" to J. J. Mounier, *On the Influence Attributed to Philosophers. . . .* Translated by J. Walker (London: 1801), pp. xii–xiii.

[83] *European Magazine* XXXII (1797), p. 176.

[84] *Gentleman's Magazine* LXIX (1799), p. 145.

[85] T. J. Mathias, *Pursuits of Literature* (Sixth edition, London: 1798), pp. 310–11n. See also *Lettres d'un Voyageur a l'Abbé Barruel* (London: 1800), pp. 161–67 where Barruel says that in 1790, "l'immortel Burke" had already seen the true origins of the revolution, and that everything written since that time on this subject has been only "un pur commentaire de son Texte."

whole is admirable in every point of view. . . .[86] Barruel is an ingenious writer who has traced the plot against Christianity "with much accuracy" and has proved his case beyond doubt.[87] Indeed, anyone who can withhold his belief after reading the *Memoirs* is simply a person "who knows not how to appreciate the value and amount of historical evidence."[88]

An even more striking tribute was paid to the *Memoirs* by those who thought the work of such importance that it should reach as wide an audience as possible. This is frankly the object of the Rev. Lewis Hughes, to whom the Bishop of Bristol suggested an abbreviation of Barruel's work, the size of which naturally confined it to a small audience. Accordingly the Rev. Mr. Hughes' *Historical View of the Rise, Progress, and Tendency of the Principles of Jacobinism* "has little claim to originality: the materials of it are chiefly furnished by the Abbé Barruel. . . ."[89] This work is given further publicity by review in the *European Magazine*[90] and in *The British Critic,* which points out that it may be read to advantage by those who find it difficult to read the whole of Barruel's work.[91] Further service is given to the *Memoirs* by the Rev. Francis Wollaston, whose *A Country Parson's Address to his Flock* follows the conspiracy step by step, with perhaps more emphasis on Voltaire than any other supposed participant. This concentration on Voltaire is pointed out especially in reviews by *The European Magazine*[92] and *The Universal Magazine.*[93] A third condensation of the *Memoirs* is given in the anonymous *Jacobinism Displayed,* which often reproduces the very phraseology of Clifford's translation and proceeds again through every step in the conspiracy.[94] Perhaps the most representative digest of Barruel is provided by the Rev. Henry Kett in his *History the Interpreter of Prophecy,* a work

[86] Burke's letter is prefixed to Robert Clifford, *Application of Barruel's Memoirs . . .* , p. ii.

[87] Rev. R. Shepherd, *Charge to the Clergy of . . . Bedford* (London: 1801), p. 6.

[88] Samuel Horsley, *Charge to the Clergy . . . 1800* (London: 1800), pp. 13 and n.–14.

[89] See "Advertisement to the Reader."

[90] XXXV (1799), pp. 326–27.

[91] XV (1800), p. 204.

[92] XXXVI (1799), pp. 396–97.

[93] CV (1799), pp. 43–47.

[94] *Jacobinism Displayed, In an address to the People of England* (Birmingham: 1798).

which saw five editions in six years, and wherein the author quotes freely from the *Memoirs* and follows closely the outlines of the conspiracy.[95]

Through the two editions of the *Memoirs* themselves and by means of these various summaries, the story of Voltaire's conspiracy should have reached a fair section of the reading public. But many other agencies helped to spread the conviction that all was as Barruel has asserted, particularly clerical authors, bishops in their *Charges,* and other preachers whose sermons were published. It was from these churchmen that the *Memoirs* received their heartiest endorsement to the public. The Bishops O'Beirne, Watson, and Horsley were especially eloquent in disseminating Barruel's message. Bishop O'Beirne devoted a sermon largely to acquainting his hearers in Dublin with the anti-Christian conspiracy.[96] Bishop Watson devoted part of his *Address to the People of Great Britain,* which saw fourteen editions in the year of its publication, 1798, to the same purpose of exposing the anti-Christian crusade. Bishop Horsley expressed himself most forcibly of all against the conspirators, denouncing especially the flood of infidel literature which had preceded and helped to cause the French Revolution.[97]

Finally, the periodicals did much to spread the message of Barruel. Even the *Critical Review,* perhaps the most resistant of all to Barruel's general doctrine, was able to accept the anti-Christian conspiracy, and with it, therefore, the guilt of Voltaire.[98] *The British Mercury* also endorsed the view that a plot subversive of religion had given birth to the French Revolution, just as Barruel had charged.[99] Other conservative periodicals such as *The Gentle-*

[95] Rev. Henry Kett, *op. cit.,* pp. 150–200.

[96] T. L. O'Beirne, *Sermons Preached on Several Occasions* (London: 1799), p. 145.

[97] Samuel Horsley, *op. cit.,* pp. 6–7. Another interesting reaction to Barruel's plot theory is one which holds that the conspiracy was a fulfillment of Biblical prophecy. For this view see Rev. Henry Kett, *op. cit.,* I, p. 296 and II, pp. 114–15 *passim;* Thomas Bingham, *The Triumph of Truth* (Cambridge: 1800), pp. 120–21; Bishop George Pretyman, *Thanksgiving Day Sermon,* 1797 (London: 1798), pp. 11 and n. Cf. *Prophetic Conjectures on the French Revolution* (London: 1793), *An Historical View of the French Revolution,* 2 vols. (Newcastle upon Tyne; 1796), I, p. 14, which two works do not of course mention Barruel.

[98] XXI (1797), pp. 536–37.

[99] II (1799), pp. 335, 339.

man's Magazine[100] and *The European Magazine*[101] as already noted, endorsed Barruel's message enthusiastically. *The British Critic* accepts the charge of a regular conspiracy ending in the French Revolution, remarking with especial heat on the watchword of the plotters: " 'écrasez l'infâme,' " and feeling that every good man "has felt ashamed to belong even to the same species of beings, with the monsters who could perpetrate such horrour. . . ."[102] *The Anti-Jacobin or Weekly Examiner* also gives currency to Barruel's thesis, and that its testimony was likely to be read by about fifty thousand persons is modestly suggested by the *Anti-Jacobin* in describing its immense success.[103] But the periodical most eager to convince the public of Barruel's veracity was the monthly *Anti-Jacobin Review,* which accepted the conspiracy legend in almost every detail, so that its discussion of the *Memoirs* may be added to the list of direct abridgements of the original work.[104]

It is evident, then, that the accusation of Barruel that the French Revolution had grown out of a deliberate attempt to destroy Christianity was enthusiastically received in England. Thus, by the end of the eighteenth century Voltaire's English reputation may be said to have reached its lowest point. No "presumptuous competitor" can now dispute the first place among modern infidels with Voltaire.[105] Not only had he been eager to undermine Christianity; he was ambitious that it should be destroyed by himself alone, and with unexampled vanity he announced that while twelve men had been sufficient to establish Christianity, he would show " 'that one may suffice to overthrow it.' "[106] He carried on his opposition to Christianity with that bigotry and fanaticism which he never tired

[100] LXIX (1799), pp. 145 ff.

[101] XXXII (1797), pp. 105 ff.

[102] X (1797), pp. 156, 160. Cf. *ibid.,* XI (1798), p. 246.

[103] II (1799), pp. 561–62, 619–21.

[104] I (1798), pp. 223, 359–60, 746. See also "Prefatory Address," *ibid.,* p. i, where the *Review* claims a circulation of 3,250 copies of each number. For other endorsements of Barruel's general message, see *The Inspector or Select Literary Intelligence* (1799), pp. 13 ff.; John Bowdler, *Sound an Alarm* (London: 1798), pp. 18–19; Rev. James Stillingfleet, *National Gratitude. . . .* Thanksgiving Day Sermon (Worcester: 1798), pp. 22–25.

[105] *British Critic* X (1797), p. 160.

[106] *Loc. cit.* This remark seems to have been highly shocking to the English. See *Jacobinism Displayed* (Birmingham: 1798), p. 6; Andrew Fuller, *op. cit.,* p. 244n.

of denouncing in others, and his zeal in the cause of irreligion was not inferior to that shown by Vatican missionaries or by the disciples of Calvin and Luther.[107] As a result he never lost a chance to thrust at religion, and he wrote scarcely anything in prose "without bringing in by the head and shoulders some witticism or some declamation against religion."[108] Everything he did in his later years seems to have contributed to this monstrous perversion of his genius. He was long alone in this impious warfare, but finally obtained assistance and formed a definite plan for the ruin of Christianity. He "premeditated, pursued, and conducted methodically the project of subverting Christianity"[109] and had as his immediate assistants Diderot, d'Alembert, and Frederick II. Voltaire was the chief and led the way; from 1750 on, he produced some anti-religious work every six months, and personally superintended the flood of infidel writings which was the climax of his subversive scheme.[110] He continually spurred on his helpers. His blasphemous watchword "écrasez l'infâme" seems "to exceed in *Malice* anything that ever was spoken by the Prince of Hell against his Almighty Foe."[111] There was no question then that "Voltaire was the father and founder of the conspiracy" and that he spread through Europe the ruinous doctrines which led to the French Revolution.[112] The uprising drew its original force from his doctrines,[113] and those who carried out the actual revolt, gloried in having been his disciples.[114] As the originator of all the ruin of France, Voltaire must, indeed, he held solely responsible, because "the *Beginners* of *these* specious measures of reform and renovation" are answerable for all the terrible consequences that follow. Voltaire's works have "unchristianed the French nation, and produced all the horrors of their revolution."[115]

[107] *Monthly Review* XXIII (1797), p. 532.

[108] *European Magazine* XXV (1794), p. 332.

[109] *British Mercury* II (1799), p. 356.

[110] Rev. Lewis Hughes, *op. cit.*, pp. 17, 31.

[111] *Gentleman's Magazine* LXVII (1797), Pt. II, p. 82.

[112] *Jacobinism Displayed,* pp. 24–25.

[113] *Biographical Anecdotes of the Founders of the French Republic* (London: 1797), p. 194.

[114] Thomas Rennell, *Principles of French Republicanism. . . .* (Winton: 1793), p. 11.

[115] William Jones, "Note to Voltaire Dissected," *The Scholar Armed* (Second Edition. London: 1800), II, p. 286.

If the English could thus accept Barruel's indictment of Voltaire's long life, it is small wonder that they should also believe the lurid account of his death in the *Memoirs*. This picture of Voltaire's death had a peculiar fascination for the English, many of whom found in it a final proof of his great wickedness. The concern of devout persons in this period with the manner of one's departure from life naturally helped to focus attention on the Barruel story. Once more the acceptance of his prejudiced account was made easier because of ideas already commonly held in England which were akin to his own. *The Evangelical Magazine,* for example, solicits "anecdotes, remarkable providences, and the experience of dying Christians" from its contributors.[116] *The Arminian Magazine* conducted a regular department of "Experience and happy Death" wherein the edifying last moments of the pious are held up as object lessons to the remaining faithful.[117] So also, by contrast, dying agonies of the wicked are made to serve as a warning. Men are warned to live justly by such accounts as "Awful Death of a Deist,"[118] "Miserable End of an Unbeliever,"[119] "Account of the Life and Dreadful Death of a Notorious Backslider,"[120] "Miserable End of an Infidel"[121] and the like.[122] Thus Barruel's lurid account of Voltaire's end would seem entirely just and precisely what was to be expected. Voltaire died as such monsters always die. His death was "a most instructive lesson. . . ."[123] He departed this life "in the most extreme agony" and suffered unspeakable horrors,[124] so that of all the dreadful departures from this life on record, "none were ever equal to that of Voltaire."[125] He passed the final days of his life in a state "which is dreadful to think upon." Barruel's narrative, in fact, but faintly describes

[116] *Evangelical Magazine,* "Preface," I (1794), p. 1.

[117] *Arminian Magazine* XIX (1796), p. 616: cf. *Ibid.,* XX (1797), p. 618.

[118] *Ibid.,* XVI (1793), p. 69.

[119] *Ibid.,* p. 180.

[120] *Ibid.,* XXI (1798), pp. 411–18.

[121] *Ibid.,* XIX (1796), p. 80n.

[122] For other expressions of certainty that freethinkers die horribly, see *Confessions of an Infidel. . . .* (London: Religious Tract Society), n. d., pp. 7–8; Rev. Wm. Agutter, *On the Difference between the Deaths of the Righteous and the Wicked. . . .* (London: 1800); *Christianity, A Poem* (London: 1791), pp. 11–12.

[123] *Gentleman's Magazine* LXVIII (1798), Pt. II, pp. 606–07.

[124] *Jacobinism Displayed,* pp. 17–18.

[125] Wm. Finch, *Objections of Infidel Historians. . . .* (Oxford: 1797), p. 39.

the scenes which . . . his death-bed is said to have exhibited.[126] For all the assurance with which he had expressed his perverted opinions they could not sustain him in his final moments, and his death remains for all a fearful warning.[127]

Barruel seems, therefore, to have imposed his entire interpretation of Voltaire upon English opinion, even to the final hours of the unbeliever's life. *The European Magazine* summarizes the English attitude in the last years of the eighteenth century. It was simply that "M. Barruel has given us one of the most able exposures of that man's inveterate and blasphemous spirit we ever met with."[128] *The Memoirs Illustrating the History of Jacobinism* thus completed and fixed beyond doubt the English case against Voltaire. The thesis of Barruel was accepted not only because Barruel had been at least partly anticipated in almost every separate element of his charge against Voltaire.[129] It was believed because it logically followed from a conviction which was funda-

[126] *The Contrast: . . . the last Hours of a learned Infidel and of a learned Christian* (London: Religious Tract Society), n. d., pp. 6–7.

[127] John Brewster, *Meditations of a Recluse* (London: 1800), pp. 47–48. For other acceptances of Barruel's version of Voltaire's death, see *The Last Hours of a Learned Infidel, and an Humble Christian, Contrasted* (London: 1798), pp. 7–11; Edward Ryan, D. D., *The History of the Effects of Religion on Mankind* (Third Edition, Edinburgh: 1806), pp. 83–84n. Barruel could still be quoted on Voltaire's death after two generations. See *Recantation of Paine and Voltaire. . . .* (London: 1863?), p. ii.

[128] *European Magazine* XXXII (1797), p. 105.

[129] It is interesting to note that two generations before Barruel the flood of impious literature and its consequences had been anticipated by the Rev. John Leland in an appendix to his *View of the Principal Deistical Writers,* entitled "Reflections on the Present State of Things." . . . (Third Edition in 3 vols., London: 1757), II, pp. 418–33. The undermining of religious belief, the extinction of man's fear of future sanctions, the tendency to destroy public order and to release men's passions beyond control: in short, the very core of Barruel's message was foreshadowed. This remarkable correspondence between Leland and Barruel is admitted in a note to the reprint of Leland's *Reflections on the Present State of Things. . . .* (London: 1801), p. 6 and n. where the reader is urged to "consult and compare Barruel's *Memoirs of Jacobinism.*" So close is Leland to Barruel more than fifty years before the *Memoirs,* although he does not mention Voltaire and the philosophers specifically, that this work can be cited in a footnote as if Leland were actually quoting the *Memoirs.* See also the Rev. L. Dutens, *The Tocsin; or, an appeal to Good Sense.* Trans. from the French by Rev. Thos. Falconer (London: 1798), a work published in 1769, containing a long denunciation of Voltaire and corroborating much of what Barruel had later charged.

mental to English conservative thought in that period, the certainty that religion was a bulwark to established government which would fall if popular religious belief were undermined. In the face of this basic belief, "the case against Voltaire" could not have been other than what it was, given his long warfare against what he considered to be false in organized Christianity.

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NOTES AND DOCUMENTS

HISTORY CHANGING FORM[1]

By J. Huizinga

In a previous essay[2] I have defined history as an intellectual form, i.e., a form in which the mind masters a domain lying within its grasp. Similar intellectual forms would be literature, music, philosophy. But *form* is a word covering a wide range of meaning. Thus it could be said that history as a type of mental inquiry *is* a form. Yet histories also *have* form, shapes and appearances as individual as the times they interpret; the history of the Roman Empire or of the city of New York, for instance, has a special pattern of its own, distinguishable from all others and instantly recognizable by one who knows the subject even slightly.

This latter interpretation suggests, however, still a third variant of the meaning of *form*. For though any history has of necessity an individual form, some histories have a more interesting form than others. The mind passes an aesthetic judgment in these matters. It is of *form* in the sense of something aesthetically arresting that I would speak here. I want to consider history as a form of knowledge with power to fill the imagination.

In fact, the chief historical talent seems to me to be *imagination*—not fancy, but that image-making force which recreates an original thing so that others may seem to see the features and hear the voices of the billions of people who once lived. Then it is as if the words of Michelet came true: "*L'histoire c'est une résurrection.*"

Curiously enough, photography with its thousands of images has often done disservice to our power to imagine the past. Our heads have become kaleidoscopes of pictures of everything on earth—pictures we have seen in

[1] A communication read in the Netherlands Academy of Sciences, Section of Letters, on January 15, 1941. Condensed from the author's own translation by Bert and Emily Wabeke.

[2] Professor J. Huizinga of Leiden University, the well-known medievalist and author of *The Waning of the Middle Ages*, has made notable contributions to the philosophy of history. The present essay is a specific development of the general theory of history embodied in an article "On a Definition of History" which was first printed in the *Communications of the Royal Netherlands Academy of Sciences, Section of Letters*, vol. 68 (1929), and reprinted in the same year in the author's *Cultuurhistorische Verkenningen* (Haarlem, Tjeenk Willink, 1929). A slightly modified version was published in English as a contribution to *Philosophy and History: Essays Presented to Ernst Cassirer*, ed. by Raymond Klibansky and H. J. Paton (Oxford, Clarendon Press, 1936), 1–11, and in Dutch in the latest edition of the Winkler-Prins *Encyclopedia, art.* "Geschiedenis."

movies, in books, in all the myriad displays of photographic skill. But the miscellaneous snapshot gallery is not to be confused with the power of historical imagination which is able to see through all these glimpses to the true form of the past, and reveal it anew, though never perfectly, to the minds of the readers.

This image of any part of history is, of course, little more than a potentiality. The history of the Roman Empire, taken as a whole, can hardly be more than an indefinite multitude of notions, accessible to the mind through reading or research. It is ore waiting for the labor of man to fashion it into form. Philosophy can speculate on whether or not the real form will ever be revealed. But the living desire of the historian is not to speculate, but to see this form, this shape of things gone by, and to create its image.

Perhaps, however, it would be better to drop this provocative word *image*, and to use another, obviously more closely allied to history. For the function of history can be described quite accurately as narration, a *story-telling*. Certainly in former times history took form as a *relatio*. However much the genius of historians might differ, they treated their subject-matter as a story: Thucydides as well as Herodotus, Machiavelli as well as Villani, down to Voltaire in his *Charles XII*, and even to Macaulay's *History of England* or Motley's *Rise of the Dutch Republic*. This form of historical narrative is closely connected with the ancient literary affiliations of history in times when its profession was hardly to be called scientific and when its product still mainly bore a static character, that of a direct rendering of the material offered by tradition.

But modern scientific treatment of history has often apparently invalidated this term *story*. Unless its express aim is to provide popular reading matter, a modern historical monograph is not a relation, but a disquisition. This does not mean that the contemporary work is not excellently written, but that the reader must follow the author in another mental fashion than formerly. He must keep a critical eye on the writer; he must weigh his arguments. Nevertheless, if the author is eminent and the reader's fancy lively, even the most logical scientific monograph will be enjoyable in a literary sense. In spite of all, it will be as if the author told a story rich in entanglements, suspense, and dénouement.

History, even in its severest scientific form, should always be readable. Unreadable history is no history at all, but at best a sample of historical research lacking aesthetic form. For history is not simply logical; it is epic and dramatic. Of course I am not speaking of an intentional embellishment of historical narrative with dramatic or romantic motifs, of *histoire romancée*. My assumption is that history in itself shares the aesthetic essence of the epic and the drama. No intelligent reader can read a tolerably well-written bit of history without being touched constantly in his epic or dramatic sensibilities. This response comes not just from the way in

which the materials are presented, but seems to appertain to the events themselves.

As we approach our own times, however, this element of the epic and dramatic in history seems to fade, even to vanish. It is as if former stages of civilization exhibited something which is lacking today. I find this especially true of American history, which, because it has passed in less than two centuries from rustic simplicity to a highly technical complexity, exhibits my point in striking fashion. As I speak of the gradual loss of form inherent in the material of modern history, particularly in the history of the United States since the Civil War, I should like to make it clear that I find this increasing shapelessness due not to an optical illusion nor to a deficiency in the forces or fashions of historical imagination, but to a change in the components of history itself. This view implies, of course, that in the technical and ideological composition of the present world there is little place left for the fine and venerable product of the mind over which Clio stood sponsor. So gloomy a view warrants scepticism, even my own; nevertheless the thought persists.

The history of North America before the War of Independence shows all the features proper to colonial history in general; viz., a certain lack of unity, a certain disparity, a certain rusticity. Its pattern becomes visible only from close by. The general reader, who incidentally counts for much in matters of history, will not be struck by particular beauty of line or color in the story of the thirteen separate colonies. Only the specialist who has an abundance of detailed knowledge will recognize in it those traits which make history a living thing. But it is not enough for history that the specialist should understand and enjoy it. History reaches its full function of fecundating civilization only when its general idea is available to all. This condition was fulfilled for American history from the moment the thirteen colonies wrested their freedom from the mother country. Henceforth instead of being a number of disparate units, the young states of America stand formally united. It was, to be sure, a defective cohesion which the Articles of Confederation had been able, after much trouble, to give the new commonwealth. The Federal Congress had no right to lay taxes and levies upon the several states nor means of coercion to enforce its resolutions. Economic crises within and diplomatic troubles without complete the picture of confusion and distress, which would make the history of those years indistinct to the eye but for the swiftness of the transition from disorder and crisis to order and stability. It is superfluous to recall the sequence of events. But it is interesting to note that when the delegates from the states met in the 1787 convention, they had on their official agenda no plan for far-reaching reforms. Yet two years after their meeting, the most important document of modern political history, the cornerstone of the mightiest commonwealth, had become law. Almost simultaneously the French Revolution

began a new era of history in Europe and George Washington's oath of office inaugurated a great period in the history of America.

In the first period after 1789 the historical lines are relatively simple. The persons acting are of a marked type, and the conditions and the conflicts are easy to grasp. In short, the history of those years shows shape and color. Even the economic problems, indissolubly mixed up with the political factors in American history, still display a simple structure. Capitalistic enterprises of trade, navigation, and industry in the northern states are contrasted with the landed estates in the aristocratic South, and with the rising agrarian interests in the regions then called the West, with their population of pioneers ever moving farther on. These western people, however, hardly as yet affect the history of their country. Lacking statehood and inexperienced in politics, they do not play a large part in the government, which is still in the hands of an *élite*—for such are the Yankees as well as the slave-holders. Now it is nearly always a fact that the history of a period has a distinct form when its public life is conducted by an *élite*. The masses still remain in the background.

A pronounced *form* is characteristic of American history during the first half of the nineteenth century. This epoch abounds in distinct, even picturesque types which easily fasten themselves in one's memory. There are not only men like Jefferson and Andrew Jackson, but also political leaders of the second rank like Daniel Webster, Henry Clay, and John Calhoun. Although the period is already dominated by such economic issues as free trade *vs.* tariff, banking and currency, and internal improvements, the resultant conflicts present themselves in political form, as constitutional disputes, nearly all involving the essential rivalry between the federal authority and states' rights. The antagonism between opposing interests and opinions still takes an almost classic shape. It seems very likely that in those days oratory and debate in Congress had a far greater effect and a much more direct influence on important decisions than in later times. The fame of men like Clay and Webster rests even now upon certain great speeches in the House or in the Senate.

Notwithstanding its simple and clear structure, American history during the period from 1820–1850 presents rather less marked features than European history of the same period. The reason is evident. Where a state is almost *continental* in extent, one mighty nation ruled by a fundamental law, one of the principal themes of history is missing; namely, that of ever repeated strife between independent powers for supremacy, prestige, or material advantage. This theme had filled all the epochs of Antiquity, the Middle Ages, and modern times in the old world. But American history no longer yielded anything fully equivalent to the fascinating and changeful play of diplomacy and violence going on among the competing units of political Europe. A continent-state of this type ceases, as a rule, to produce

history of the classic pattern; the element which we call epic-dramatic hardly finds room for expression. Only a crisis which breaks the political unity itself can bring again to the fore the *story* quality of history. This is what happened when the conflict over slavery became unavoidable and bloody war between North and South filled four tragic years of American life. Then at once the epic shape of history reappears. This form is not the result of literary fancy. It lies in the facts themselves. Abraham Lincoln and Robert E. Lee bear the true features of an Agamemnon and a Hector. Neither Lincoln's heroism nor Lee's chivalry may be made light of as the mere effects of romantic worship or of artful grouping of the facts. It is history itself which in these two characters takes form. The surrender at Appomattox and the shot in Ford's theatre meant the end of a tragedy in the fullest sense of the term.

After the Civil War, the history of the United States not only loses dramatic pathos, but is also robbed of comprehensible and striking form. The general reader at least will find it more or less confused, perplexing, and without unity. Its image is obscure; its outlines hard to remember. This loss of visual pregnancy is important to our theme. We have been wont to see the happenings of the past as a series of scenes; we have been accustomed to interpret history as the acting of well-defined rôles of *dramatis personae*. One has only to recall some of the famous paintings of the historical *genre* to be convinced of this. But this concept of a special personnel of players for each chapter of history, which clung to our interpretation of former periods, no longer serves modern times. We are hindered in such a vision by our strong consciousness of collective processes as the real basis of our history. We instinctively refuse to reduce them to pictorial form. However, this *impersonalization* of history is dearly bought, for in losing its pictorial form, history has lost its capacity to be retained in memory as a lively and lasting image. American history after the Civil War is exceptionally well suited to illustrate this loss.

When reading accounts which portray the decades of 1870–1890, one can hardly escape the impression that the history of the United States is losing its former charm. The story of those years leaves a sense of weariness, of confusion. Yet it is not historical importance that is wanting. The scene is as full of passionate conflicts as ever before. Public life is as loud, the problems are as weighty. The struggle for silver, the movements of Grangers and populists, the particularly bitter and bloody strikes of the epoch, the rise of the monster trusts—all these subjects would seem to supply ample material for history in the grand style. Nevertheless the subject-matter fails to make a captivating story. Is it because corruption and vulgarity loom larger in that period than before or after? The cause, it would seem, lies deeper. There is an indistinctness in the sequence of events; there is no form to be visualized in the whole. Of course, an Ameri-

can well versed in the particulars of his country's past and present will doubtless perceive features here more clearly than a foreign historian could do. Still I doubt whether even the best student of American history could trace an historical portrait of persons like Conkling or J. G. Blaine as vivid and striking as he might draw of Jefferson or Andrew Jackson. A real difference in the historical factors of the two eras makes the historical perceptions different.

I feel sure that the main reason for this difference lies in the continual domination of the economic factor over the political in later American history. Consequently history has had to change its record of personal happenings to one of collective phenomena. In the economic process individuals may play a special part—as inventors, as promoters, as tycoons, as legislators, but never as *persons,* and never as *masters* of the process. In political events, however, individuals emerge as personalities, fully human in their aspects. This circumstance implies that in a history dominated by the economic factor—as American history undoubtedly is, far more so than European—the human element recedes into the background. I can but call this an objective change in the historical process itself, a change which is part of the awesome phenomenon we are now witnessing with foreboding: the mechanization of all social life.

If my conclusion is correct, a history which has become diffuse and indistinct because of such an excess of the economic factor may resume its dramatic tension and marked outline only when the political process regains a primary importance, when events come to gravitate around a striking personality as protagonist in some violent strife. This is what happened in modern American history when the conflict over Cuba arose, when war with Spain was declared and Theodore Roosevelt burst upon the scene with his surprising actions and great success. This remarkable man electrified American history not because he was the first to fight the trusts, but because he was Teddy, a vivid and inimitable type of man for all time to come. Whereas W. J. Bryan, with all the fulminant pathos of vigorous oratory in his early years and with all his serious later work for international peace, has long been a vague shadow, whereas even Woodrow Wilson remains too much a painful recollection, Theodore Roosevelt keeps shape—and this in spite of that other who bears the same surname and whose authority and vast responsibilities now exceed those of his predecessor. Once more in our day great names are rising, and political issues overtower economic ones. And once more a vast scene of dramatic history—and tragedy—has been revealed.

Let us now summarize and conclude. Several decades of increasing shapelessness in American history can be explained by the fact that a political unit covering the main part of a whole continent loses, by its very homogeneity, the most fertile of all themes for history: the conflict between inde-

pendent powers, be they peaceful rivals or hostile opponents. Furthermore, the ever-increasing preponderance in such a continent-commonwealth of economic forces is likely to obscure the human being as an actor in history. It is of course true that an American living in the midst of his country's throbbing life will feel the excitement of the presidential campaigns, for instance, and find in them the drama that the historical process should provide. And yet has such a focus given him a vision of true history, comparable to what the world still keeps of Salamis, of Luther before the Diet in Worms, or of the eighteenth of Brumaire? I doubt it.

There is one thought to be added. The modern world is becoming more and more accustomed to thinking in numbers. America has hitherto been more addicted to this, perhaps, than Europe. But now even in Europe men of science, technologists and statisticians, have driven almost all thought into the corner of purely quantitative valuation. Only the number counts, only the number expresses thought. This shift in the mode of thinking is full of grave dangers for civilization, and for that civilizing product of the mind called history. Once *numbers* reign supreme in our society, there will be no story left to tell, no images for history to evoke. Already many historical writers have moved to the periphery of Clio's domain and concern themselves with those regions which belong in a sense to history without actually being history (archaeology, anthropology, history of art and literature, etc.). Does this indicate that the tree which once bore the fruits of epic political history is bound to wither? Or will a coming generation win back the classic form of history?

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ON PHYSICAL SPACE

FRANCESCO PATRIZI

TRANSLATED BY BENJAMIN BRICKMAN

Francesco Patrizi (1529–1597) belongs to a group conventionally known as the Italian Nature-philosophers of the sixteenth century, including besides himself such figures as Telesio, Bruno, and Campanella. His natural world is composed of four elements: Space (*spacium*), Light (*lumen*), Heat (*calor*), and Fluid(*fluor*). But this material world is not an independent entity. A study of Patrizi's system, *Nova de Universis Philosophia* (Ferrara, 1591, and Venice, 1593), will show that he identifies himself with the Neoplatonic tradition, or at least with important elements in it. Patrizi's universe is a nine-grade hierarchy of Being, from the incorporeal to the corporeal, in which the higher is the cause of the lower. The source whence these nine emanate is God, whom Patrizi describes as *Un'omnia*. The existence and the permanence of the natural world are guaranteed by the supernal realm.

Patrizi studied at Padua, and then came under the influence of Telesio; but he found the Platonic tradition and its metaphysics of light more congenial, and expounded it for some twenty years at the brilliant court of Ferrara, where he was Professor of Platonic Philosophy. He was strongly anti-Aristotelian, and never ceased to criticize Aristotle and the Peripatetics of his own day. In 1581 appeared his *Discussiones Peripateticae,* a work of hostile criticism. The *Nova Philosophia*[1] includes a sharp attack on the Aristotelian natural philosophy. It contains four main sections: *Panaugia,* on Light; *Panarchia,* on first principles; *Pampsychia,* on Souls; and *Pancosmia,* on the natural elements, and on astronomy and natural science.

The material here translated consists of the first book of the *Pancosmia, De Spacio Physico,* and excerpts from the second, *De Spacio Mathematico.* The text employed is the New York Public Library copy of the Venice edition (1593). The work is numbered by leaves, each leaf consisting of four columns, here labeled a, b, c, d. According to reliable bibliographical data[2] Patrizi issued in 1587 a work entitled: *De Rerum Natura libri II priores, alter de spacio physico, alter de spacio mathematico,* which from the identity of titles is probably the same material as the first two books of the *Pancosmia.* Patrizi refers to these two in the *De Spacio Physico,* fol. 61–a.

Space is the most important of Patrizi's four natural elements. It is

[1] The translator has published a dissertation entitled: An Introduction to Francesco Patrizi's *Nova de Universis Philosophia* (New York, 1941).

[2] Bibliothèque Nationale, British Museum, Bodleian Library, and Vatican Library, according to Library of Congress Card Catalogue.

the first thing created by God *extra se*, since it is needed as the *locus* for all things. Just as Space is prior to everything else in nature, so is the science of Space, mathematics, prior to the study of nature. Telesio, from whom Patrizi borrows his "experimental" disproof of the Aristotelian doctrine of Place, had already defended the notion of an empty "Space" in which body could expand and contract under the influence of cosmic forces, attacking the Aristotelian idea of relative and "natural" place. But the empirically-minded Telesio set a very low estimate on mathematics; and it remained for Patrizi to reformulate the Platonic conception of an independent Space in the form destined to be so influential upon the seventeenth-century scientists. Originating thus in the Platonic tradition, Absolute Space reached Gassendi through Campanella, and through Gassendi and Henry More came to Newton's famous scholium. The two strains, empirical and Platonic, so prominent in Newton's conception, are already blended in Patrizi, who can thus claim to be the ancestor of the Absolute Space of early modern science. Patrizi first elevated Space to that metaphysical pre-eminence which More and Newton emphasized; and he also developed the consequences for a mathematical science of nature in sharp opposition to the Aristotelian physics.

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FRANCISCUS PATRICIUS

Pancosmia

Book I

(61–a) On Physical Space (De Spacio Physico)

Now what did the Supreme Maker create before all other things apart from Himself? What was it more necessary or fitting to create first, than that which all other things required for their existence, and could not exist without, but which could itself exist without any other things, and needed none of them for its own existence? For this must needs be prior to all else; when it is present all other things can be, when absent, all others are destroyed. Aristotle himself maintained that that in the absence of which nothing else exists, and which can exist without anything else, is necessarily prior to all other things. But this is Space itself. For all things, whether corporeal or incorporeal, if they are not somewhere, are nowhere; and if they are nowhere they do not even exist. If they do not exist they are nothing. If they are nothing, there will then be neither souls, nor natures, qualities, forms, or bodies. But that these are the degrees of things outside the Divine Deep has already been stated. If they do not exist, there will be no world of things outside the Divine Deep. But this contradicts our senses and all reason. Therefore these degrees of things exist. If they exist, they

cannot exist nowhere. Hence they exist somewhere, and so in some place, and so in Space—in length, breadth or depth, or in two or all three of them. Therefore Space is prior to all these other degrees of things: they need it to exist, while Space itself needs none of them to exist.

Some of my Peripatetic friends, when they read two essays of mine on Space, mocked me gently, since their master had written nothing along those lines. Ridiculous, stupid men, and ignorant of their master's writings! For what is his "*locus*" other than Space, with length and breadth, even if in *locus* he himself foolishly overlooked depth (*profundum*), which is more properly *locus*? What else is his "*magnitudo*," in terms of which for him all motion goes on—upward, downward, sidewise, and circular? Do they believe that there is no Space between the earth and the sky? But let us disregard those who flatly refuse to be shown that a new world (*orbis novus*) exists, simply because Aristotle said nothing about it. Let us philosophize for others than such thinkers, and let us employ the testimony of the senses and rational proofs. Let us not be frightened by any great names. Let us study things themselves, the truth in things and the causes of the truth. Let us seek the truth for the truth's sake. Let us therefore return to the problem.

As concerns bodies, it seems that no one can doubt that they are in "place" (*locus*), that is, in Space (*spacium*), since bodies are surrounded by and filled with Space on all sides, both within and without. But the forms extending over a whole body fill the same threefold dimension. The qualities of heat, cold, humidity, dryness, softness, hardness, etc.,—who does not see them existing both outside of, around, and within, bodies? Indeed, if Nature itself, which will be treated later, should be found to extend throughout bodies, to touch them externally and to dwell within them internally, it too must be said to be in Space. Likewise Life, and that soul which is called "sensitive," if it is distributed among the organs of the body, will extend through Space. And if Reason and the Mind of the soul inform the body (which Aristotle appears to have held, but of which I have thus far been extremely doubtful), then, like other forms, they too are extended throughout bodies. If, however, the soul is in the body not as a form, but as form-giver (*formatrix*), then since the body is in Space, the soul too will be in Space. But if the body is in the soul, then the soul, if divisible, will exist in divisible Space; if indivisible, in indivisible Space. But if Divinity as a whole is indivisible, as it is, it will exist in indivisible Space and be enveloped all around by divisible Space. Even if it exists nowhere, it cannot be conceived without Space. If it exists anywhere, either at the summit of the sky or above it, it is sure to be in Space. If it exists everywhere, it cannot but be in Space. All things (*entia*), therefore, and whatever stands above things, are in Space and cannot but be in Space. Hence before things could go forth from the Divine Deep they needed Space,

with which the Deep itself is surrounded, in order to go forth and exist—if they were to be, or have the power to be, things. Therefore Space was brought forth by the First One before all other things, as if breathed out by the breath of His mouth and diffused into the finite and infinite. Hence it is unnecessary to inquire further as to whether Space exists in the universe. What we ought to explore is whether Space is anything.

¶ A certain notion, common to all men, seems to have held that Space exists and is something, since it has generated the following terms and others like them: dimension, distance, interval (*intervallum* and *intercapedo*), space, distance (*diastasis*), and interval (*diastema*). This agreement between the Latins and the Greeks seems to have had its origin in the senses. For who does not perceive the sky to be at a distance from the earth in our world, the Orient from the Occident, one's feet from his head, and, in the head, one eye from the other, and the nose from the mouth? If you do not perceive these distances, intervals, or spaces, do not trouble to read or understand these pages. For what I am writing is for those endowed with perception and minds. Therefore the question as to whether Space exists disappears so soon as we take the first step in this inquiry. But perhaps the other one does not, namely, is Space something? For it might be that Space exists, but is *nothing*. This matter we shall discuss as follows:

Are being and non-being (*ens et non-ens*) the same, or not the same? If the same, then anything both is and is not. This, however, is impossible, as all philosophers agree. And there is likewise agreement on the following: If anything is, it is a being (*ens*); if it is *not*, it is *nothing*. For the latter is excluded from the class of beings (*entia*), just as the former is counted among them. Space, therefore, cannot be something and be counted among beings, and at the same time not be something, and be excluded from that class. Hence Space—and distance—which in man extends from head[3] to feet, belongs to the class of beings and is something. And the same is true of any other expression of interval.

¶ But of what sort is this being, this something? For one may argue the point further. Let us consider it as follows: All the ancients agreed that there are three kinds of Space—length or line, width or surface, and depth, which together with the other two they called body. Thus the mathematicians, who profess never to err, taught that length without breadth is the first Space, or preferably, "interval," breadth the second, and depth the third—but in this sense, that breadth cannot be conceived unless preceded by and conjoined with length, and depth cannot subsist by itself unless the first two precede it and are conjoined with it. And just as the first alone produces a line, so do the first two, when joined, make a surface, and all three, joined together, form a body, which they call a mathematical body. The most authoritative physicists define a natural body as that which consists

[3] *capite* omitted in text.

of length, breadth, and depth, and of "*antitypia*," which is resistance. Or again, body is that which has three "distances" and "*antitypia*." Still another definition: Body is that which is distinguished by the dimension of three "intervals," with "*antitypia*." Finally—Body is a congeries of size, shape, and resistance. Size and shape, moreover, cannot exist without some dimension, either one, two, or all three mentioned. Thus there are three kinds, or species, of space, whether they are mathematical or physical when considered only *per se*—length or line, breadth or surface, and depth or body. These are so described in a physical body that length is sometimes regarded as the greatest space which appears in a body, and sometimes as that which extends from above down; breadth is considered the intermediate space in bodies, or that which extends from right to left. But depth is the smallest space in a body, or that which extends from the front backward.

¶ In each body, therefore, of whatever sort, mathematical or natural, three dimensions will be found, which are recognized both by the mind and the senses. For who has not perceived, in any body before him, the dimension from up to down, and the one from right to left, and likewise the one from the front to the rear? These are sometimes changed with respect to us, so that what was above is below, what was on the right is on the left, and likewise, what was in front is in the back. But none of these dimensions disappears in such a change. For length, breadth, and depth endure until the destruction of that body. No one ought still to doubt that these three dimensions, acknowledged by everyone, are inherent in every natural body, and the property of every body.

But I maintain, in addition, that they exist in all "corporeal things," that is, in all those that extend throughout bodies, either their wholes or parts, one or several. Now I give the name *corporeal things* to what are called qualities—heat, cold, whiteness, blackness, etc. For they occupy either the inside and outside of bodies as a whole, or their parts. That is, they either cover the surface, or else penetrate the depths and thus extend also through those three dimensions and "spaces." Thus we shall conclude that these three dimensions and distances, and through them Space itself (*simpliciter*) are found in corporeal things, that is, those that are spread through bodies, as well as in bodies themselves. But the dimensions in corporeal things differ from those in bodies themselves, in that the latter are properties of the bodies, while the former are not properties of the qualities. For qualities have no quantity, size, length, width, or depth, *per se* and by their nature, but only by accident, in that they extend through bodies, which have quantity and size, and are three-dimensional. There is Space in them, therefore, but it is accidental to them. It is likewise in all bodies, but there as an essential attribute (*proprium*).

¶ That Space exists, that it is something, and three-dimensional, and that it can be found in corporeal qualities and in all bodies, as a property or

accident, the previous discussion has sufficiently shown. But perhaps our study revolves not around this question, namely, do bodies have Space in them?—but rather around this, namely, is there any other Space apart from what is in particular bodies, that is, which is not a property of some body? Let us discuss this problem as follows: These three spaces—length, width, and depth—have also been attributed to Place (*locus*). For thus is Place described somewhere among the writings of the ancients: "Place truly has three 'distances'—length, width, and depth—by which every body is bounded. Yet it is impossible for *locus* to be a body."

¶ In this statement the three dimensions which limit every body are attributed to *locus,* which, it is maintained, cannot be a body. *Locus,* therefore, has three dimensions, as has every body, but yet is not a body. But if it is not a body, what then is it? Not a line, certainly, since this has only one dimension, not three. What then is it? Evidently something incorporeal, having all the dimensions of a body, yet not a body. Aristotle, indeed, who had attributed three dimensions to place, as if forgetting himself, later denied what he had previously asserted. For he does deny it when he says: "*Locus* must be the boundary of the enclosing body, with which it touches the body enclosed." In this account he defines *locus* as the *surface* of the surrounding body. This statement contradicts the former, or the former contradicts this one; but let us not dwell on the contradictions. Let us rather study the truth of the matter very carefully.

There are two opinions, one maintaining that *locus* has three dimensions (*intervalla*), the other, that it has two. Which is more true? It has already been established that body, which is in *locus* (*locatur*), has three dimensions. But *locus* is accorded three dimensions in the earlier statement, and two in the later. On first thought (*intuitus*) it may seem more likely to everyone that the three dimensions of the body in place (*locatum*) would also have their place in three such dimensions of *locus.* Anyone disagreeing would have to present a valid and true reason to show in what manner three dimensions can be located in two. Furthermore, since that same objector has posited among the conditions of *locus,* that it is neither larger nor smaller than the located body, he will have to show how a surface alone, consisting of two dimensions, can equal a three-dimensional body. And how *locus,* if it is a surface, can so locate a body that there is a sort of *locus* that does not locate a body. For the depth of a located body cannot be located by a surface. And further, how can there be any body consisting mostly of depth which is not in a *locus* with its depth? Among the conditions of *locus* is included, that the *locus* contain the located object. Now the question is, does it have to contain the whole object or a part of it, or does it have to leave some parts out? If a part is left out, then *locus* no longer contains the located object, as was laid down. *Locus* must therefore contain the entire located object. And if it must contain the whole, it will necessarily also contain the

depth of the located object. But how can a surface, which is what *locus* is said to be, having, as it does, only two dimensions—length and width—how can it bound length, width, and a third dimension besides, that is, the depth of the located body? If the depth is not contained in it, it will not be in Place, nor will *locus* contain the located object, nor is *locus* equal to the located object, nor the located object equal to *locus*. But if *locus* does contain the located object, how did the bounded body, after putting aside its volume, become a surface instead of a body? Moreover, if that body is in a *locus*, which has another body outside itself surrounding and enclosing it, we ask this question—when[4] the surrounding body is moved away, does it take with it its surface, which is what *locus* is said to be, or does it leave it behind? If it leaves it behind, you will get a body without surface, which is utterly ridiculous. However, if it takes it along, how will that other condition of *locus* set down by our objector remain? For he maintains that *locus* is immovable. Besides, how will *locus* remain immovable if the located body departs from it? For the *locus* will not follow it if it is immovable, and since it is immovable, it will no longer be *locus* since it no longer contains a located object. Therefore, there will either be a vacuum there, which is not conceded by the objector, or else the surface will be confused and united with its body in one mass; but then it will no longer be immovable.

For all these reasons it appears incorrect to say that *locus* consists of merely two dimensions; and it appears true that it consists of three dimensions by which the three dimensions of the located body are received, so that the length, width, and depth of the *locus* correspond to the length, width, and depth of the located object, and are exactly equal to each other. The whole *locus*, therefore, will not be merely the surface of a containing body, but also the depth within the surface, along with the other dimensions.

But what are we saying? The container is a body; that which is bounded is likewise a body. Will two bodies interpenetrate each other with their volumes (*profunditas*), and shall we admit the interpenetration of bodies? But that is impossible. The enclosed (*locatum*) body, on entering or leaving a *locus*, always takes its volume with it. But the bounding (*locans*) body first received within its volume the volume of the enclosed body, and then released that body so that it could take its volume with it. But whither had the volume of the bounding body withdrawn while it was receiving the enclosed body? This cannot even be conceived. It is therefore necessary that the bounding body, while receiving the enclosed body, depart thence entirely and leave the Space (*spacium*), which is fixed there, empty of itself so as to be filled by the entering body. When the latter in turn withdraws completely, that space itself, which is immobile, must receive another entering body. And so that space, ever the same, ever fixed, must have length, width, and depth so as to release all bodies that leave it, and receive all

[4] *si* omitted in text.

bodies that enter it. Otherwise, we are faced with the interpenetration of bodies, which is impossible. Therefore the former explanation is necessary. From the fact that while bodies change place the same space always remains fixed, it is clearly evident that *locus* is something different from bodies located in it. For it remains fixed, while different bodies enter and leave it without its moving at all. Whence are derived these common views on *locus*, admitted by all philosophers: *Locus* is something different from the *locatum; locus* is fixed, while the bodies that are enclosed are movable from one *locus* to another.

When, however, it is said that *locus* is different from the *locatum*, this is to be taken to mean that every *locatum* is a body, while *locus* is not a body, otherwise two bodies will interpenetrate. Hence *locus*, not being a body, will of necessity be a Space (*spacium*) provided with three dimensions—length, breadth, and depth—with which it receives into itself and holds the length, breadth, and depth of the enclosed body. And such a threefold Space is true *locus*, different from the *locatum* and fixed *per se*, and equal to the *locatum* on all sides. Therefore *locus* has its proper Space, different from the Space belonging to a body. Indeed, that very threefold Space is really *locus*, and *locus* is really threefold Space.

Nor is Space an accident of *locus*, as it is of body. For the property of a natural body, in so far as it is a natural body, is that *antitypia* mentioned above, and what is called *anteresis*. This is resistance (*resistentia et renitentia*). This resistance needs that three-dimensional Space for its being. For this reason the three dimensions are almost as accidental to body as they were to corporeal things. But of *locus* they are such essential properties that they are not accidental to it, nor do they come to it from elsewhere. Rather, this very *locus* is nothing else than those dimensions. And Space is really *locus*, *locus* really Space. Therefore was it truly said: "*Locus* has a sort of marvelous power, which is prior to all others. For by nature *locus* is just as prior to body as body is to corporeal qualities. For that without which nothing else can exist, while it can exist without anything else, is necessarily prior."

¶ Indeed, is not *locus* spoken of in relation to the *locatum* much as a father is spoken of in relation to a son? All seem to agree on this point. Yet, just as a father, should his relation to his son cease, would still be an animal or a human, so can *locus*, apart from its relation to the *locatum*, still be something *per se*. This, however, the ancients called a "vacuum," with this difference, of course, that when the same space contains a body it is called *locus;* but if it does not contain a body, it is to be called a vacuum. But in truth they are all the same thing—*vacuum, spacium, plenum*, and *locus*. When it is filled with a body, it is *locus;* without a body it is a vacuum. And on this account this vacuum, like *locus*, must have the three common dimensions—length, width, and depth. And the vacuum itself is nothing else than three-dimensional Space.

Will then any Space be found in the nature of things that is really a vacuum, devoid of any body? On this question there were various views among the ancients. For some maintained that there is no empty Space in the world or outside it. Others maintained that while it cannot exist in the world, it can exist outside it. Still others held that it can exist in the world, but not outside it. Let me, however, philosophize on this question as follows: If there is anywhere any Space devoid of body, it must exist either in the world or outside it. Whether there is any such outside the world will be considered later. Now, however, let us see whether there is in the world any Space devoid of body. Almost all of the ancients were of the opinion that there is no vacuum in the world, and said that it could not be found at all. Some were content with a mere denial, while others attempted to prove it rationally. But since nothing is proved by them which the senses cannot refute, let us investigate the question in the following manner:

¶ The question as to whether there is a vacuum in the world can be asked in three ways: First, whether there is in the world some huge Space occupying a large part of the world itself, in the same manner that the uninformed are wont to think that the whole region of the air is empty, having convinced themselves that there is no body there, since they feel no resistance of the air as they do of other bodies; secondly, whether there can be in the world some small empty space; thirdly, whether there can be some sort of minute empty spaces (*spaciola*) between bodies.

Now as to the first kind, I agree with those holding the negative view, namely, that there is no Void in the world. But the other two views, namely, that there are small and minute empty spaces, I not only do not deny, but maintain very strongly. Let us first treat of the third type.

Just as air is interspersed minutely between the particles of sand, so must it be thought that tiny bits of empty space are interspersed between the particles of air. They are also interspersed between the particles of water and those of all other more solid bodies. Even though we do not perceive this fact with our senses, it nevertheless appears to be demonstrable by reason based on sensation (*ratione a sensu orta*). For we perceive with our senses that water expands and contracts; and that the same is true of air, though not so visibly. When water contracts, it must fill up the empty spaces interspersed within it, else you are faced with the interpenetration of bodies, a phenomenon so strongly opposed by the ancients. For if part A of water, which is a body, is crowded into another part of the water, B, which is also body, one body indeed penetrates another, and the threefold dimension of body A has entered into the threefold dimension of body B. If this is denied, I shall ask whither half of the water went. For we see a double mass reduced to a single, and after condensation it is only half the size of what it was before condensation. When this happens, we must admit that either

it penetrated the other half, or else filled the many minute empty spaces interspersed within the water. But that it was not destroyed is shown by the fact that when that same half, condensed into ice, is melted by the heat of the sun or a fire, it expands to the same double mass as before. But the interpenetration of one half with the other is inadmissible. There must remain, therefore, the third explanation, that it withdrew into its tiny empty spaces and thus acquired greater density.

The air, likewise, yields to my body when I change my position in it. As it gives way it is either destroyed or else withdrawn into its other neighboring particles, and thus, either one part penetrates the other, or else it withdraws into the empty spaces interspersed within it. But we must not say that it was destroyed, without any previous transformation. Nor is the interpenetration of one part of the air with another admissible. Therefore, we must admit that it betook itself into the empty spaces of the nearby air. And it is in this sense that certain of the wisest of the ancients, well informed on the nature of things, found in the vacuum the reason for density and rarity; and also maintained that the motion of bodies took place through the Void, the object met giving way and withdrawing into the nearest empty little spaces. This view was distorted by Aristotle, who lest any one appear wiser than himself, considered all his predecessors foolish and even senseless, as though they had maintained that there is in the world an enormous mass of emptiness through which bodies might move, and with a very large amount of sophistic argument strove to destroy that view, which was neither held nor promulgated by any one. But if we reduce this sophistic argument to the correct reasoning I have just advanced, we will easily see the dross of sophisms and will recognize the conceit of the man. But let us return to the question.

By the same reason as explained the condensation of air and water we can explain the contraction of other bodies. These contract when their parts withdraw into their internal pores, which are tiny empty spaces. They expand again when they return to their former positions from those recesses of emptiness whither they had withdrawn. Since both liquid and solid bodies, all of which are porous, have these tiny empty spaces interspersed within them, why can we not maintain that there is as much *vacuum* in the world as there is *plenum*? For it is not inconsistent with reason to say that nature provided each equally, because each might be of equal use to its things, while it expands the dense and condenses the rare. In these two ways it accomplishes all of its creations. But philosophers have long since admitted that nature does everything with right reason. And so let these be our views on the tiny empty spaces that nature interspersed among things. Let us now pass over to that other possibility—the larger vacuums. For that larger empty spaces are made by some forces and artificial processes the senses themselves sometimes show. Let us explain this with examples.

Let us construct a hollow sphere out of molten tin,[5] completely closed on all sides, and through a single opening let us insert into it a hollow tube as far as the center. There is no doubt that the sphere must be said to be full of air. Then, placing the tube in the mouth, let us draw out the air from inside; we shall, without doubt, extract a good deal. And so a large vacuum will necessarily be left inside.

In addition, the Clepsydra or garden water-clock, by which many have attempted to establish that a vacuum does not exist, proves the opposite, namely, that empty space can exist in it. For if it has tiny openings in the bottom, and if the hole at the top is closed tightly with a finger, water will not flow through those openings in the bottom. And thus it seems that it does not admit a vacuum. But if one or more openings in the bottom are made large, water will undoubtedly flow through, and before it all flows out there will be a vacuum inside the clock. Experience shows this fact. But indeed, if the water-clock is filled with sand, it will fall through those tiny apertures, being heavier than water. The same is true of honey and oil.

Likewise, if we fill a jar with water, oil, or wine and close it tightly at the top, and then expose it to an extremely low temperature in winter, the liquid will freeze and will make part of the jar empty. All of these things every person can experience for himself. And so through these several experiments the possibility of empty space is established, in opposition to the first observation cited.

This will become clear through an additional experiment. If a pouch full of water is squeezed, the water will flow out and the pouch will remain compressed. Then let its mouth, through which the water has flowed, be bound as tightly as possible. This done, let the pouch be stretched by the hands; it will follow the hands, and thus the space inside will become large, and since neither air, water, nor any other body entered it through the bound mouth, who will henceforth doubt that that entire space is empty of all body? And so, through the employment of natural and artificial devices, the senses themselves, observation, and reasoning derived from them have shown very plainly that there are and can exist vacua and empty spaces in the world.

¶ Moreover, neither the authority nor the reasoning of Aristotle hinders us at all from believing that there is empty Space outside the whole world (*mundum universum*). He contends that beyond the *caelum* there is no *locus*, vacuum, body, motion, or time. He does not deny that empty Space exists there. But he does maintain that it is not the sort of vacuum that can contain a body or become *locus*. And even if he had strongly denied the existence of Space there, but still had not proved it by reason, it would not have hindered me from being able to prove rationally that Space does exist there. Let us therefore prove, not indeed by our senses, which do not reach so far, nor by the authority of anyone, although there are some ancients

[5] *stamno*, ed.; read: *stanno*.

whose authority I might counterpose to Aristotle's; but let us prove by almost observable reasons, that there is Space outside the world, and that too, empty.

¶ Now we say that among the fixed stars there are the figures of the twelve signs of the zodiac, together with not a few others. Let us take one whole sign—Aries. This, according to the astrologers, who are versed in celestial studies, is thirty degrees long and twelve degrees wide, as are the remaining signs of the zodiac. This length of Aries is in the innermost surface of the heaven. It is also in the depth of the body of the heaven, as well as in its internal mass. Why is it not also continuous and even with these in the outermost and highest surface of the same heaven? For either the heaven has a surface there, or it does not. If it should be said that it does not have, the absurdity will follow of either the heaven's not being a body, or of its being a body without a surface. Since these absurdities are false, we must say that the heaven has an outer surface also, and that this must be those thirty degrees long and twelve degrees wide, or larger, or smaller. If, therefore, there are length and breadth in that surface of the sign, there must be an equal amount of that empty Space contiguous to it, that is, thirty degrees long and twelve degrees wide. And the further the outermost lines bounding Aries are prolonged from the surface of the heaven the larger the Space they will embrace. This having been shown in the case[6] of outermost Aries, I think no one should doubt that the same is true of the remaining eleven signs.

Therefore the twelve signs of the zodiac, in the topmost surface of the heaven, will each have as much empty space contiguous to them as they themselves occupy; that is, 360 degrees in total length, and twelve degrees wide. But if from the beginning and end of each sign lines are prolonged through the surface of the heaven all the way to each pole, they will divide it into twelve equal parts, like a melon. These parts must each have just as many parts of that empty space contiguous to them. And so the whole heaven and the whole world must be surrounded by an outermost space. This matter has now become so clear that should anyone doubt it further, I should doubt whether he possesses eyes and mind.

Should anyone like to hear further proof, let him attend to this. Some of the most accurate of the ancient physicists predicted that our world would finally burn up. If it turns to vapors or smoke, it will occupy a hundred thousand times as much *locus,* and perhaps more. But this *locus* will be that empty Space, which, when filled with a body is called *locus;* but which now that it contains no body is merely empty Space. And those who advanced this tenet grasped it by a process of conception not unlike that abstraction which other physicists employ in understanding mathematics. And just as for the latter an absurd conclusion does not follow, so will no

[6] *Hac in re Ariete . . . demonstrata,* ed.; read: *Hac re in Ariete demonstrata.*

absurdity follow from that idea of conflagration—nor from this further idea: if the whole world were imagined in one's mind to move from its Place, it would of necessity occupy that much empty Space and would make in it a Place for itself, which now, since it does not contain a body, is only empty space. Further, if our world were contracted by God into a smaller mass, empty Space would be left within that *locus* which now exists, not to mention what some allow themselves to imagine about a man standing at the edge of the heaven, with his arm extended outward.

Let it therefore be considered as proved conclusively by these reasons that there is empty Space outside the world. This is not *locus* yet, to be sure, but it becomes *locus* in our thought (*cogitatio*), and will at some time, perhaps, become *locus* in fact.

¶ This Space, which surrounds the whole world on all sides, is held to be finite by some of the ancients, infinite by others. There are also those who held it to be the greatest of all things. Thales of Miletus, who held this view, did not err from the truth, and advanced an excellent reason for his opinion. When asked what the greatest thing is, he replied *locus*. For the world contains all other things, but *locus* contains the world itself. I say his answer was excellent, if by this greatest *locus* he meant the empty Space beyond the world. Posidonius taught that it is not infinite, but sufficiently large to hold the world when it is consumed in fire. Other Stoics maintained that it is infinite, but what their reasons were is not at all clear. Approaching the question from another direction, I maintain that the Space outside the world is both finite and infinite. It is finite on the side where it touches the outermost surface of the world; finite not with respect to its own natural limit but with respect to the boundary of the world. But where it recedes from the world and moves far away from it, it passes into the infinite. That this is so I prove by the following reasons. If somewhere in this departure and withdrawal that Space came to an end, it would be bounded either by its own terminus, by some other, by both, or by neither. That it is bounded by its own terminus does not appear to be reasonable. For in so far as it would do the *limiting*, it would be of the opposite nature from the one it possesses as something *limited*, the boundary and the bounded would be the same thing, and *locus* and *locatum* would be the same. Also, how could this unlikeness, generated of its very self, be established? For to be bounded is a sort of being acted upon, while to bound is an action. But how can anything both act upon itself, and with respect to the same thing, be acted upon by itself? If this is impossible (since as being acted upon it is potential, while as acting it is already actual), it must be said that if that Space is limited, there is something else that limits it, just as that part of Space which is the immediate boundary of the world is acted upon and is bounded by the world. But how can that which is situated a very long distance from the world be bounded by the world, when the termini of those things which are

reciprocally boundary and bounded must be contiguous and touching each other? Therefore the world cannot bound a Space which is very far away from it. Therefore Space which is far away from the world cannot be bounded either by itself or by the world. Nor can it be bounded by some other thing there. For that would be either a body, or something incorporeal, or some such "mean" as Space itself. But if it should be such a mean, and not at all dissimilar from the rest of Space, why should it not be regarded as identical with it? In that case it would be bounded by its very self, the opposite of which has been proved. Nor can it be bounded there by any body, for every body is within the world. Then, even if it should be maintained that some body exists outside the world, I shall ask if that body occupies Space as its *locus*. If the answer is that it does not occupy Space, because it sets an end to universal Space by some of its own surface, then I shall say that that is not a body, since it is not three-dimensional. But if it should be supposed to be three-dimensional, it of necessity occupies Space, and so another Space will be beyond the whole of Space, which would set a limit to it. Then I shall further ask whether this other Space, and the body occupying it, is finite or infinite. If finite, by what is it bounded? We shall return through these same questions to the present one an infinite number of times. If Space is infinite, I shall further ask why, in order to establish a limit to one infinite, another infinite must be needlessly invented. Therefore, that prime Space receding from the world neither is, nor can be, bounded by any body, finite or infinite. But if it should be advanced that prime Space is bounded by some incorporeal thing, I shall ask whether this incorporeal thing itself has termini whereby to bound Space, or not. If it does not, then we shall infer that it cannot bound, for whatever bounds other things does so with its own termini. If it should be advanced that it has termini, then it is either a line, surface, or body. But how could a line or surface bound the depth of that Space? And besides, a line or surface can be found only in body or in three-dimensional Space. But it has already been proved that Space is not bounded by a body or by Space.

¶ Therefore, since that Space receding from the world is bounded neither by the termini of a body, by the termini of a second Space, by its own termini, nor by incorporeal things, it must be concluded that it recedes into the infinite and that it is infinite. But of what sort of infinity is it, potential, so to speak, or actual? If it were said to be potential, it would necessarily follow that it is now finite, and that later it would become infinite, but still only potentially infinite. But if that is an absurdity, we conclude that it is actually infinite. But is it infinite with respect to lines, surfaces, or even depths? With respect to all of them, of course. For if it is infinite with respect to one of them, it necessarily is also infinite with respect to all, except where it touches the world or where it is limited by the capacity of our minds. But this terminus does not alter its nature, nor does it remove it from its infinitude.

¶ But what shall we say about the Space that holds the world, which is the *locus* of the world, in which the world is, and which is in the world? Does it have the same nature as that infinite external Space, or does it have a different nature? Indeed it has both.[7] It has the same nature as the external infinite Space, according to the testimony of the ancients, all of whom said that empty Space and *locus* are the same. When filled with a body, it is called *locus*, when not filled with a body it is called the Void (*inane*). Let us add several proofs of this tenet. Neither of these two kinds of Space is a body. Each is capable of receiving a body. Each gives way to a body. Each is three-dimensional. Each can penetrate the dimensions of bodies. Neither offers any resistance to bodies and each cedes and leaves a *locus* for bodies in motion. And just as resistance (*resistentia, renitentia,* and *antitypia*) is the property of a body which makes it a natural body, so is a yielding offered to bodies and their motions the property of each kind of Space. In this alone do they differ, in that the one that encloses the world is filled with the body of the world, while the other is empty of all bodies. In this too do they differ, namely, that the former is both finite and infinite, while the latter is wholly finite. And from its midpoint it is equal on all sides. For if from its center, which is the center of the world, lines are drawn in all directions to the convex surface of the world, they will all be equal, but finite. But if they are prolonged further, and still further, as far as possible, they will still be equal, but infinite, for they can be extended through the infinite, universal Space beyond the world. The center of Space, therefore, is at the midpoint of the infinite *universum spacium.* And the Space around the center as far as the outer surface of the world is the middle of the universal Space. This central, "mundane," and finite Space differs from the exterior Space for others reasons too. For the latter is empty and entirely a vacuum, whatever its magnitude. But the former is filled with the world and with all the bodies in the world, only divided by the tiny empty Spaces[8] interspersed between the bodies. These interspersed, empty spaces are really as large and as many as there are Spaces in the *plenum.* Moreover, it is a *plenum* to the senses and in popular parlance, but according to reason, as I have shown, it is a vacuum, and its being a plenum does not pertain to its essence, but is rather accidental to it. For plentitude, of course, comes to it from the bodies, which are different from it in nature in such a way that the spaces which we spoke of before as essential attributes of bodies, are for the most part accidental to them, their own essence consisting in resistance. Therfore, if to be filled is accidental to this Space of the world, to be empty pertains to its essence. For half of the Space of the world is empty, as is that universal Space beyond the world. But even though this is so, Space still exercises great power in relation to the bodies

[7] *eius,* ed.; read: *eiusdem.*

[8] *intervalli vacui,* ed.; read: *intervallis vacuis.*

that occupy it, in such a manner that, with none of these resisting or obstructing it, it penetrates all of them without resistance. And contrariwise, it lacks powers to such an extent that all bodies penetrate it without any resistance on its part. It also divides all bodies and is divided by them. It injures no body, nor is it injured by any. Nevertheless, nothing impossible follows from this. For it is neither similar to, nor the opposite of, them. Neither does it resist them, nor do they resist it, and while *it* cannot resist *them,* it places itself in all of them. And it communicates to them all of its points, lines, surfaces, and depths, and without depriving itself of any, it bestows them upon bodies, so that they possess those things that it retains for itself. And thus it comes about that as a *plenum* it penetrates all things and is penetrated by all of them. It likewise embraces all things and is embraced by all of them. And while bounding all things it itself is bounded by all of them. Since it does and undergoes all of these things, and grants to all bodies their being, actions, and passions, why may it not be regarded as the *principium* of the whole essence of bodies, of their action and their being acted upon? And since it sets an end to all bodies, why may it not also be regarded as the end (*finis*) of bodies? And following from this, why may it not be claimed to be both the beginning and end of things? And since it is finite and infinite, why may not the beginning and end be regarded as finite and infinite? Almost all of these views the most outstanding ancient philosophers either expressed or, perhaps, implied.

¶ No one, it seems, should have any doubt that the corporeal qualities which we said are extended through bodies, are posterior to the bodies themselves. For, whichever they are, and how many there are, they are accidents. Yet bodies are substances, and that substances are prior to accidents, no one likewise can doubt. Therefore bodies are prior to their qualities. But *loci* are prior to bodies, for if *locus* were not prior to body, then bodies would not be in a *locus,* which is owned by all philosophers to be impossible. And on this account an ancient sophist said: "The nature of *locus* is something wonderful and prior to everything. For without it, none of the other things could exist, while it can exist without them. Therefore it must be primary (*primum*)."

¶ For if bodies came into being and no *locus* were provided for them, where would they be located? If a tree were to sprout forth from the ground, or grow, whither would it grow if it found no *locus* provided for it? Truly, therefore, both in nature and in time, *locus* is prior to bodies and corporeal qualities. But if *locus* is not spoken of as *locus* unless and in so far as it encloses a body, and if by its nature it is a part of the total Space before it is *locus,* then this part of Space exists before the *locus.* And since a part and the whole are by nature simultaneous, universal Space is by nature prior to *locus.* Likewise, if *locus* and *vacuum* are the same, and a *vacuum* comes before a *plenum* both in nature and in thought, and *locus,* in

so far as it is *locus*, is a *plenum*, then a vacuum is certainly prior to *locus*, and should be prior to it. But it is an essential attribute of Space to be a vacuum, hence Space is prior to *locus* both in nature and in time. But since there are no other *entia* in Nature besides these four, namely, *spacium*, *locus*, *corpus*, and *qualitas*, and since *corpus* is prior to *qualitas*, *locus* to *corpus*, and *spacium* to *locus*, then *spacium*, of course, is the first (*primum*) of all things. Likewise, the world is prior to all the *loci*, bodies, and qualities in it. But Space antedates the world, and, of course, it is the first of all things in the world. And why not even prior to the world itself? For if the world should be completely destroyed and become nothing, which some not at all obscure ancient philosophers asserted would happen, the Space in which the world is now contained, as *locus*, will remain entirely empty. And if God should make once again new heavens and a new earth, which is maintained by many wise men and by those who are divinely inspired, Space preexists that can hold the new heavens and earth. Before this world that we inhabit was made by God, there was the empty Space, in which either atoms floated hither and yon, *chaos* was rolled around, or unformed matter was rolled about in irregular movements. Therefore Space was there before the formation of the world. Therefore Space is by its nature prior to the world, and the first of all things in the world, before which there was nothing and after which, everything.

¶ What, then, finally, is this Space which existed before the world, after which came the world, which contains the world, and extends beyond it? Is it merely an aptitude for holding bodies, and nothing more than that? To be sure, this Space holds all bodies, but it does not seem to be nothing but an aptitude. Indeed, if it is something, it will be either a substance or an accident. If it is a substance, it is either some incorporeal thing or a body. If it is an accident, it is either a quantity, a quality, or some other such thing. Now I maintain that Space *per se*, since it is prior to the world and outside it, is not one of the things of the world except for that part of it that contains the world, or that the world occupies with its body. It is indeed a different thing from the world. For the world is a body, while Space is not a body at all. It is therefore not embraced by any of the categories, and is prior to and outside them all. What then is it? It is *hypostasis*, *diastema*, *diastasis*, *ecstasis*, *extensio*, *intervallum*, *capedo*, and *intercapedo*. Is it then a quantity, and thus an accident?—an accident prior to substance, and prior to body? The two Archytas's, both the elder, the student of Pythagoras, and the younger, the friend of Plato, as well as the writers on the categories who followed them, knew nothing of this Space. Granted that the categories serve well for earthly things; Space is not among earthly things, it is other than the world. It is the accident of no earthly thing, whether body or not body, whether substance or accident—it is prior to them all. As all things come to be in it, so are they accidental to it; so that not only what are

listed in the categories as accidents, but also what is there called substance, are for it accidents. Hence it must be treated in a different way from the categories. Space therefore is substantial extension (*extensio hypostatica*), subsisting *per se*, inhering in nothing else. It is not quantity. And if it be a quantity, it is not that of the categories, but prior to it, and its source and origin. Nor can it be called an accident, for it is not the attribute of any substance.

Is it then a substance? If substance is *id quod per se substat*, Space is above all a substance. For it subsists *per se* and depends on nothing else for its being; it requires nothing to sustain it, but itself provides their sustenance to substances, and sustains them in their being. If substance is *quod per se existit*, Space is above all a substance, because above all it exists *per se*. If substance is *quae aliis substat*, Space is above all a substance, for it sustains all the other things in nature. If substance is *quae nulla aliarum rerum eget ad esse*, then Space is above all a substance, since it requires nothing else for its existence, whereas all other things need Space for their existence. If substance is *primum omnium entium*, Space is above all a substance, for it has already been shown that it is prior to all other things.

For all these reasons, therefore, it is very clear that Space is above all a substance, but not the "substance" of the category. For it is not an individual substance, because it is not composed of matter and form. Neither is it a genus, for it is predicated neither of species nor of individual things. It is a different sort of substance outside the table of categories. What then is it, a body or an incorporeal substance? Neither, but a mean between the two. It is not a body, because it displays no resistance, nor is it ever an object of, or subject to, vision, touch, or any other sense. On the other hand,[9] it is not incorporeal, being three-dimensional. It has length, breadth, and depth—not just one, two, or several of these dimensions, but all of them. Therefore it is an incorporeal body and a corporeal non-body. And in each aspect it is *per se substans, per se existens, in se existens*, so much so, that it also always remains fixed *per se* and in itself, nor is it ever or anywhere moved, nor does it change its essence or *locus* in any of its parts or in its entirety. Whatever is moved, is moved through this Space; but this Space does not move upon itself, nor does anything exist anywhere upon which it can be moved. Also, there is no terminus within it or beyond it whence or whither it can move. Nor does any part of it migrate hither and yon. For it would be moving through a part of itself, and the two parts of Space would be one within and on the other, and the *locus* of the part that moved would remain empty of Space, and thus Space would be empty of itself. It therefore does not move either as a whole or in its parts. It is therefore entirely unmoved and immovable.

[9] *rusus*, ed.; read: *rursus*.

¶ What am I saying? Is Space entirely stationary? Is it stationary in its parts? Or does it have parts? Can it be spoken of as a whole? It has two parts, but it cannot be spoken of as a whole. One part is that which is filled with the world, the other is that which is empty of the world and exists beyond it. But it cannot be spoken of as a whole consisting of these parts. For every whole consists of parts,[10] all finite, because of which it too is of necessity finite. But Space, in so far as the part filled with the world is concerned is, limited by the limits of the world and is equal to them. But as far as the part that is empty of the world and beyond it is concerned, it is, as I have shown, at once finite and infinite.

But which of these two parts has the greater powers of acting and being acted upon, the infinite or the finite? Or do they both have equal powers, or none at all? It appears reasonable that the infinite part has the greater powers, since it is not reasonable that the infinite and finite have equal powers, much less that the finite and smaller part has greater powers. But first let us treat of the infinite. If it has any powers, it exercises them either on itself, on the finite part, or on the world itself and its parts. If it exercises them on itself, one of its parts endowed with these powers will act on another of its parts possessing either the same powers, greater or less powers, or none at all. If it has the same powers, how will it be acted upon by equal powers? Or how will it act on equal powers? Much less does it appear possible if the part acted upon has greater powers. For this would sooner act on the one with less powers than be acted upon by the other. But if the part acted upon is endowed with weaker powers it can perhaps be acted upon to some extent by the greater powers. But who would ascribe such inequality of powers to a thing entirely uniform throughout, and make one part different from another? It does not appear that Space acquired this difference in parts from itself. It must, then, have got it from something else. But from what could it get it if there is nothing else besides itself? Hence nothing produced any difference of forces there. Does it then not act at all, or is it not acted upon at all? Exactly so. For there are no powers to conquer other powers there, since they are not different or unequal.

It is possible, then, that it will be acted upon by something else—by chaos, perhaps, or unformed matter, or the atoms, which used to float through Space, or were rolled about before the world was molded into shape, or by the world after it was molded into shape. It once received them all, and at present it receives the world. Is this "receiving" an action or a being acted upon? It seems to be both and neither. It is neither, since there was none of that alteration that normally results from either an action or a being acted upon. But it is also both, because to receive is to act, and wherever there is an action, there must be, it seems, a being acted upon too. It seems, therefore, that it has these powers of receiving. But does it have these alone,

[10] *partinus*, ed.; read: *partibus*.

or other related ones too? Of course, it seems to have the power of both locating what it receives within itself and of surrounding it on all sides from without, just as it located and surrounded the things mentioned above, and our world.

This much about infinite Space. But the finite Space in the world has the three powers of receiving, locating, and surrounding, and besides these, the power of penetrating all bodies and of uniting itself with the spaces belonging to them, and in addition, the power of giving a Place to the motions of bodies. For, as Hermes, the wisest of the Egyptians, asserted, a body that is moved is moved through an immovable medium; but there is no other immovable medium in the world besides Space and the earth. But not all the motions of fish, birds, and the other creatures of the air occur above the earth. Besides, the principal bodies of the world have the power of being fixed each in its own Place and rank and of not being dislodged therefrom. And thus it happens that the center of the world is always in the center of Space, the earth remains immovable in the same Space around the center, and likewise water, air, and the entire heaven. But if this is so, the bodies of the world, the heaven, and the elements, occupied from the beginning the parts of Space appropriate to each, in which they might be enclosed and which they might retain forever.

Just as these bodies differ in nature from one another, so can the parts of Space that underlie (*subiectae*) each of them seem to differ from each other. This difference, arising as it does from located bodies, is accidental to them, unless it should be proved that those parts of Space were so arranged from the beginning that the one holding the earth is incapable of holding the air, and the one holding the water is unable to hold the heaven, air, or earth, and that each part received bodies peculiar to itself. But if this is granted, this property must have been given each one of the parts by some other superior power. But whose power that is, and what sort of power it is, will be looked into thoroughly in its own place.

Book II (Excerpts)

On Mathematical Space (De Spacio Mathematico)

Primary Space is divided by no power of Nature or of the human mind. Nevertheless Nature did place discrete bodies in its continuous parts. But the mind conceives it as discrete whenever it so desires. And throughout it lines, surfaces, bodies, and incorporeal qualities, it seems, are actually infinite both in number and in magnitude; that is, in reality itself there are lengths, breadths, and depths, without number and without end. All these things however are imagined by us as finite. And our mind selects those finite spaces that can be accommodated to the spaces of earthly bodies. The mind does not separate these spaces from bodies by abstraction, as some

contend, since these spaces are not primarily and *per se* in earthly bodies, but are prior to bodies, and are actualized in primary Space. Nor yet is it in our imagination or thought (as some admirable men have asserted), as in a substratum, that these dimensions and the rest formed from them have their subsistence. But the mind by its own power cuts off from primary Space those parts that will be of future use to it either in contemplation or in operation. . . .

It has become clear that the continuum is in its own nature older and prior to all division; that its division and cutting, made by the power of human thought, created Number. And hence it becomes clear why the ancients called Number a discrete quantity, guessing rather than knowing the reason. It is also clear that continuous quantity exists by nature, while Number is the work of the human mind. But in earthly bodies which are divided from each other it also exists by nature. It likewise becomes clear that the continuum is older than the discrete, since no division can be made by any power without an antecedent continuum. Hence there is solved that difficult question which has disturbed ancients and moderns, namely, which is prior in nature, the science of the continuous, which is called "geometry" from the measuring of fields and not from its own nature, or the science of the discrete, which is called arithmetic. The latter I of course say stems from the former, and hence is secondary. And since Space is the first of all natural things, it is clear that the science of Space, both of the continuous and the discrete, is prior to matter. Nor were the Pythagoreans entirely right when they held only Number to be prior to matter. That mathematics precedes natural philosophy (*physiologia*) follows from the same reason. It is also the mean between the completely incorporeal and the completely corporeal, not for the reason the ancients gave, that through abstraction from natural things it becomes, as it were, incorporeal, but because Space is really a body that is incorporeal and an incorporeal that is a body. Whence it follows that as a body it has an affinity with natural things and bodies, as far as their dimensions are concerned; but as an incorporeal it reflects to a certain extent what is really and absolutely incorporeal, and is closer to it than any natural body. Carrying the same reasoning further, it is clear to anyone undertaking the study of natural things that the science of Space must be acquired and taught before either natural science or that treating of the actions and passions of men. For the latter come after the activities of nature, and these in turn come after Space. Rightly did this saying appear over the entrance of the divine Plato's school: "Let no one enter who is ignorant of geometry." And rightly was it said by the Pythagoreans that all things take their origin from the finite and the infinite, should they be found to have had primary[11] Space in mind. . . .

Moreover, from these two sciences [geometry and arithmetic] others take

[11] *primu*, ed.; read: *primo*.

their rise, and these are neither few nor obscure, and are linked with other natural things. The first of these, and nearest to Space, is *actinography*, on which Democritus wrote of old, which is the science of the rays of Light. For Light is by nature nearest to Space, and the first thing to fill Space, as will be shown later. This is followed by *gnomonics, meteoroscopics, dioptrics, optics, catoptrics, sciography,* and any other science there may be that treats of rays, *lumina,* and shadows. And after these comes the whole of *astronomy* and its branches, which studies the bodies that are the sources of Light and whose motions change it. This is followed by *pneumatics,* which studies and treats of the air, the body next to the heaven, and by *music* and the whole of *hydraulics,* which puts water into operation, and whatever other science is connected with it. After these come the sciences dealing with the earth and the methods of measuring it, namely, *geography, surveying,* which concerns itself with its surface, and *stereometry,* which concerns itself with its depths. Lastly there is *barymetry,* dealing with weights, and the entire study of *aequeponderantia* and *centroponderantia.* If there is in these sciences any utility for the life of man, it is due entirely to those first two sciences, as the fountain-heads; but the beginning of both must be referred to Space and its study, which I am the first to set forth in these books. Whence it appears that Aristotle was wrong in teaching that mathematics lacks purpose and utility.

BOOKS RECEIVED

MYTH AND SOCIETY IN ATTIC DRAMA. By Alan M. G. Little. New York: Columbia University Press, 1942. Pp. xi, 95. $1.50.—Evolution of Athenian drama, in the fifth century and the Hellenistic period, as the product of Athenian society. The treatment of myth as primitive thought and its use by the drama in Athens as a method of transition from tribalism to democratic society.

BARTOLUS ON SOCIAL CONDITIONS IN THE FOURTEENTH CENTURY. By Anna T. Sheedy. New York: Columbia University Press, 1942. Pp. 267. $3.25.—An examination of the writings of the jurist Bartolus of Sassoferrato for information regarding certain aspects of social life and thought in fourteenth-century Italy.

THE ANGLO-SAXON MINOR POEMS. Edited by Elliott Van Kirk Dobbie. New York: Columbia University Press, 1942. Pp. clxxx, 220. $4.50.—The verse texts of fifty-three Anglo-Saxon poems edited from more than seventy-two separate manuscripts and other sources, with introductions, bibliography, texts, and notes. This completes the six volumes of Anglo-Saxon Poetic Records save for the one containing "Beowulf" and "Judith," which is now in preparation.

SHAKESPEARE AND THE NATURE OF MAN. By Theodore Spencer. New York: The Macmillan Company, 1942. Pp. 252. $2.75.—A study of Shakespeare's expression of human nature, and of his style in relation to the medieval and Renaissance background.

ENGLISH BARDS AND GRECIAN MARBLES. By Stephan A. Larrabee. New York: Columbia University Press, 1943. Pp. xiii, 312. $3.50.—How, from the Renaissance to the early nineteenth century, the concern of the English poets with Grecian statuary exhibited the shifting of interest from description to interpretation; from admiration of counterfeits of nature to speculation on Ideal Beauty; from disquisitions of the best proportions of the Grecian models to considerations of the "inner meaning" or significance of the ancient forms.

THE FORGOTTEN HUME. *Le bon David.* By Ernest Campbell Mossner. New York: Columbia University Press, 1943. Pp. xv, 251. $3.00.—Hume's autobiography is reprinted in the first ten pages. Hume's roots in eighteenth-century literary and social thought: the Scottish poets, Wallace, Rousseau, the Johnsonians, form the basis for a fresh portrayal.

BAUDELAIRE THE CRITIC. By Margaret Gilman. New York: Columbia University Press, 1943. Pp. vii, 264. $3.00.—"The poet is in the largest sense a translator of his experience, a translator into words. The critic also is, in his way, a translator, the translator of what he has experienced in reading a poem, in standing before a picture, in listening to music. But the

critic does not stop here; he goes on to discover the underlying principles of artistic activity. Baudelaire, the poet of the *Fleurs du Mal,* was also a critic who undertook the most difficult of criticism, that of one's own contemporaries."

THE PHILOSOPHY OF G. E. MOORE. The Library of Living Philosophers, Vol. IV. Edited by Paul A. Schilpp. Evanston and Chicago: Northwestern University, 1942. Pp. xvi, 717. $4.00.—Moore's Autobiography is followed by 19 critical commentaries on ethical, epistemological, and methodological topics in Moore's philosophy. Moore replies to his critics. Bibliography of his writings.

THE NEGRO IN COLONIAL NEW ENGLAND. By Lorenzo Johnston Greene. New York: Columbia University Press, 1942. Pp. 390. $4.50.—The part the Negro played in the Puritan colonies from 1625 to 1780 or so. The social, political, and economic repercussions of the buying and selling of slaves upon Puritan institutions.

JOHN BACH MCMASTER, AMERICAN HISTORIAN. By Eric F. Goldman. Philadelphia: University of Pennsylvania Press, 1943. Pp. 194. $2.00.—A study of the life and works of the famous author of the *History of the People of the United States.*

A SHORT HISTORY OF CANADA FOR AMERICANS. By Alfred LeRoy Burt. Minneapolis: University of Minnesota Press, 1942. Pp. xvi, 280. $3.00 (Text edition, $2.50).—From the establishment of New France and its recasting of Old World feudalism, down through the War of 1812 and World Wars I and II.

IN COMMEMORATION OF WILLIAM JAMES, 1842–1942. Edited by H. M. Kallen. New York: Columbia University Press, 1942. Pp. xii, 239. $2.75.—"This work contains sixteen papers by persons of a later generation than James—some of his blood; some friends and colleagues of his life time; some of his pupils and disciples; and all students of his works reverencing his memory."

THE ORIGIN OF DEWEY'S INSTRUMENTALISM. By Morton G. White. New York: Columbia University Press, 1943. Pp. v, 161. $2.25.—A chronicled analysis of Dewey's shift from Hegelian idealism to instrumentalism in logical theory. Against Dewey's own claims to indebtedness to Peirce, the author indicates the more potent influence of George S. Morris (1840–89) and other idealists on Dewey's early thought.

THE EARLY HISTORY OF SCIENCE AND LEARNING IN AMERICA. Papers read before the American Philosophical Society, Feb. 13–14, 1942. Philadelphia, Pa., Proceedings of the Society, vol. 86, no. 1. Pp. 204. $1.25.—Especial reference to the work of the American Philosophical Society during the nineteenth and twentieth centuries in promoting researches by American scientists in mathematics, astronomy, physics, geology, engineering, agriculture, botany, paper-making, medicine, entomology, vertebrate paleontology, and anthropology.

SCIENCE REMAKES THE WORLD. By James Stokley. New York: Ives Washburn, 1942. Pp. 300. $3.50.—The new industrial revolution of synthetic products discovered by science in war-time.

THE MARITAIN VOLUME OF THE THOMIST (Published January, 1943, as Vol. V of *The Thomist*). Dedicated to Jacques Maritain on the occasion of his Sixtieth Anniversary. New York: Sheed and Ward. Pp. 374. $3.50.—Includes essays by Robert M. Hutchins, Louis Finkelstein, Mortimer Adler, Anton C. Pegis, John U. Nef, and a bibliography of Jacques Maritain.

A PROPHET AND A PILGRIM. Being the Incredible History of Thomas Lake Harris and Laurence Oliphant; Their Sexual Mysticisms and Utopian Communities Amply Documented to Confound the Skeptic. By Herbert W. Schneider and George Lawton. New York: Columbia University Press, 1942. Pp. xviii, 589. $5.00.—"The history of our country is filled with instances of small bands of idealistic men and women who, having rejected the main ethical, religious, and economic codes of their day, have followed a prophet out into the wilderness to hew out in peace and privacy an existence closer to their dreams. The Brotherhood of the New Life resembled other better known expressions of this phenomenon in two respects: it was a revolt from the church for the proposed founding of a theocratic community; and it was built on an elaboration of the mythology of sex."

THE AMERICAN SPIRIT. A Study of the Idea of Civilization in the United States. By Charles A. Beard and Mary R. Beard. Volume IV: The Rise of American Civilization. New York: The Macmillan Co., 1942. Pp. 696. $5.00.—Whereas in the previous three volumes the authors dealt with "outward expressions" of American civilization (government, politics, business enterprise, economy, institutions, letters, arts, and sciences), now they deal with its manifestations in written and spoken statements relative to the "intellectual and moral qualities deemed necessary to the processes and forms of civilization."

GERMAN PSYCHOLOGICAL WARFARE. Edited by Ladislas Farago, for the Committee for National Morale. New York: G. P. Putnam's Sons, 1942. Pp. 302. $3.00.—Analysis of Germany's mobilization of ideological techniques for political and military uses.

THE CHILEAN POPULAR FRONT. By John Reese Stevenson. Philadelphia: University of Pennsylvania Press, 1942. Pp. 155. $1.50.—A brief history of Chile's political and economic development since the time of its domination by Spain, the liberal constitution of 1925, the dictatorship of Ibanez, Alessandri's second regime, the Popular Front of 1938–40, and its present problems.

THE WISDOM OF CHINA AND INDIA. Edited by Lin Yutang. New York: Random House, 1942. Pp. 1104. $3.95.—Selections, with annotations and introductions, from the literary and philosophical classics of Hinduism, Buddhism, Confucianism, and Taoism. The editor has made new transla-

tions of Laotse, Chuangtse, Mencius, Confucius, and some of the chief Chinese poets.

THE GREAT LEARNING AND THE MEAN-IN-ACTION. Newly translated from the Chinese, with an Introductory Essay on the History of Chinese Philosophy. By E. R. Hughes. New York: E. P. Dutton and Co., 1943. $2.00.—"In the seventeenth and eighteenth centuries Confucianist thought entered into the main stream of western European thought." The main changes in Chinese ethical thought between the second and twelfth centuries and in the society which produced the two books whose titles appear above.

A PERMANENT UNITED NATIONS. By Amos J. Peaslee. New York: G. P. Putnam's Sons, 1942. Pp. 146. $1.50.—Suggestions for the solution of post-war problems of finance, government, and law for the entire world.

THE INTERPRETATION OF HISTORY. By Jacques Barzun, Hajo Holborn, Herbert Heaton, Dumas Malone, George La Piana. Edited with an Introduction by Joseph R. Strayer. Princeton: Princeton University Press, 1943. Pp. 186. $2.00.—Barzun considers the gap between scholarly history and the history used by average citizens. Holborn illustrates his concept of the "science of history." Heaton, using the economic interpretation of history as an example, warns against over-emphasizing any single aspect of social activity. Malone deals with the difficulties of biography. La Piana, in his essay on "The Theology of History," shows the danger of trying to adapt history to a pattern of non-historical beliefs.

THE OTHER SIDE OF HISTORY. A History Teacher from Sauk Centre. By Henry Johnson. New York: Columbia University Press, 1943. Pp. 263. $2.75.—The story of rural, smalltown America as reflected in the life of the author.

THE ART OF WORLDLY WISDOM. By Balthasar Gracian. Translated from the Spanish by Joseph Jacobs. New York: Macmillan Co., 1943. Pp. lxxv, 196. $1.50.—The *Oráculo Manual* (Madrid, 1653) of Gracian, with an introduction and bibliographical appendix by the translator. Cf. Arpad Steiner, "A Mirror for Scholars of the Baroque," *JHI* I, 3 (June 1940), 320–334.

NEW VIEWPOINTS ON THE SPANISH COLONIZATION OF AMERICA. By Silvio Zavala. Philadelphia: Univ. of Pennsylvania Press, 1943. Pp. 118. $1.25.—The social history of the institutions that were characteristic of Spanish-Indian relationships in colonial America was very different from that of English America, which drew its inspiration mainly from the principles of the Reformation and of Rationalism.

PHYSICS AND PHILOSOPHY. By Sir James Jeans. Cambridge: At the University Press; New York: Macmillan Co., 1943. Pp. 222. $2.75.—"Determinism and freedom, matter and materialism need to be redefined in the light of our new scientific knowledge." A brief survey of the history of philosophy and physics.

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